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COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

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These Reo Gold Comet-Powered trucks in the fleet of the Emge Packing Company, Inc., Fort Branch, Ind., log 1,000 miles a week, averaging eight miles per gallon of gasoline. Payloads? Twelve tons with the Reo E-22RT tractors, seven to eight tons on the E-22C straight trucks. "Best we have ever used," says Walter Emge. "Our plan is to replace all equipment of the E-21 and E-22 capacities with new E models." Get the Reo Gold Comet story from your nearest Reo dealer today. It's a new chapter in trucking history!

REO MOTORS, INC., LANSING 20, MICH.

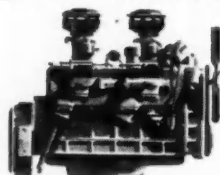
REO

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DODGE 4-TONNER "Job-Rated"

① NEW 377 cu. in. Heavy-duty Engine



You get power with economy . . . 154 maximum gross horsepower; 330 pound-feet maximum gross torque. It's of the famous, time-proved L-head type. It is designed and precision-built to provide the right power for low-cost, long-life operation on your job.

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Ask your Dodge dealer to show you this "Job-Rated" load-lugger . . . soon!

For low-cost transportation, switch to

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- Non-acid cleaner that quickly removes rust, scale, grease and slime in one simple operation.
- Double Action Radiator Cement to seal leaks.
- Rust Preventor to prevent rust formation.

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1950 FLEET OPERATORS' REFERENCE

APRIL 1950

Vol. LXXIX

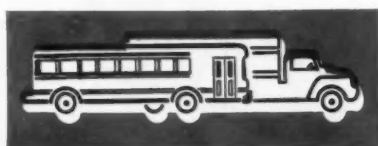
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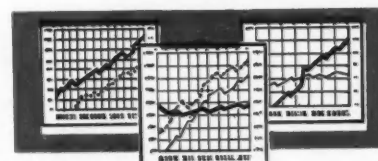
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COMMERCIAL CAR JOURNAL

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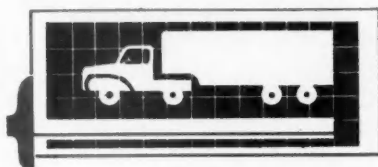
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COMMERCIAL CAR JOURNAL, April, 1950



St. Paul extra heavy duty... ...and then some

This 10 cubic yard semi-trailer dump body is one of seven St. Paul Units hauling rock on a 30-mile round trip (75-minute cycle) at Harlan Dam, Nebraska. The trucks work 16 to 20 hours per day six days per week traveling over an improved dirt road with electric eyes controlling traffic at 90 degree turns.

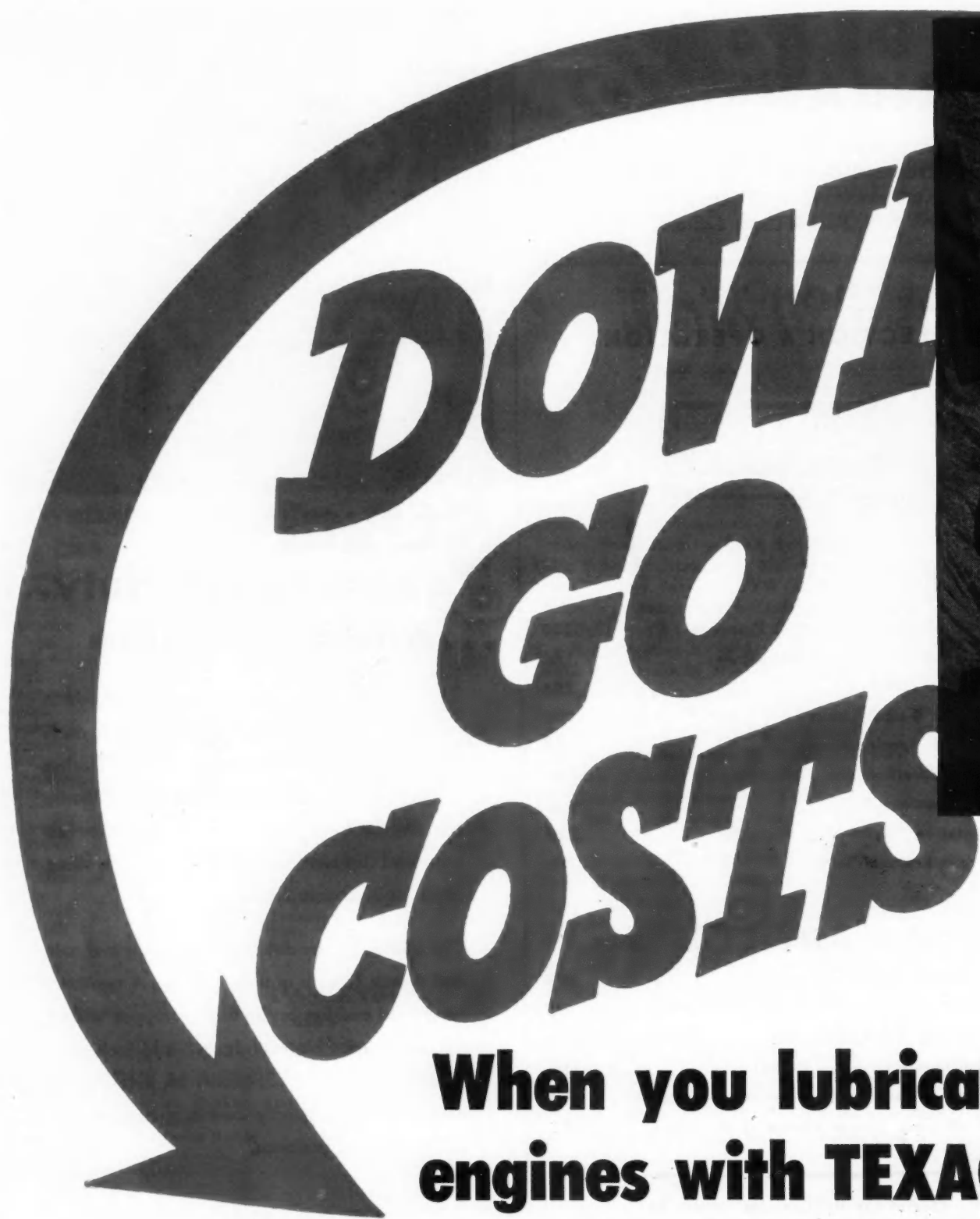
The bodies feature double I-beam longitudinals and 4-inch I-beam outside bracing. A two-inch hardwood cushion in the floor is topped with a 1/4-inch wearing plate. Body shell is 1/4-inch steel. The hoist is the St. Paul Model 95, noted for its ability to dump heavily loaded bodies, even in badly distorted positions.

Whether you need a special body like this or a standard dump truck unit, put in a call to your St. Paul Distributor. He's a dump unit specialist ... and ready to serve you!

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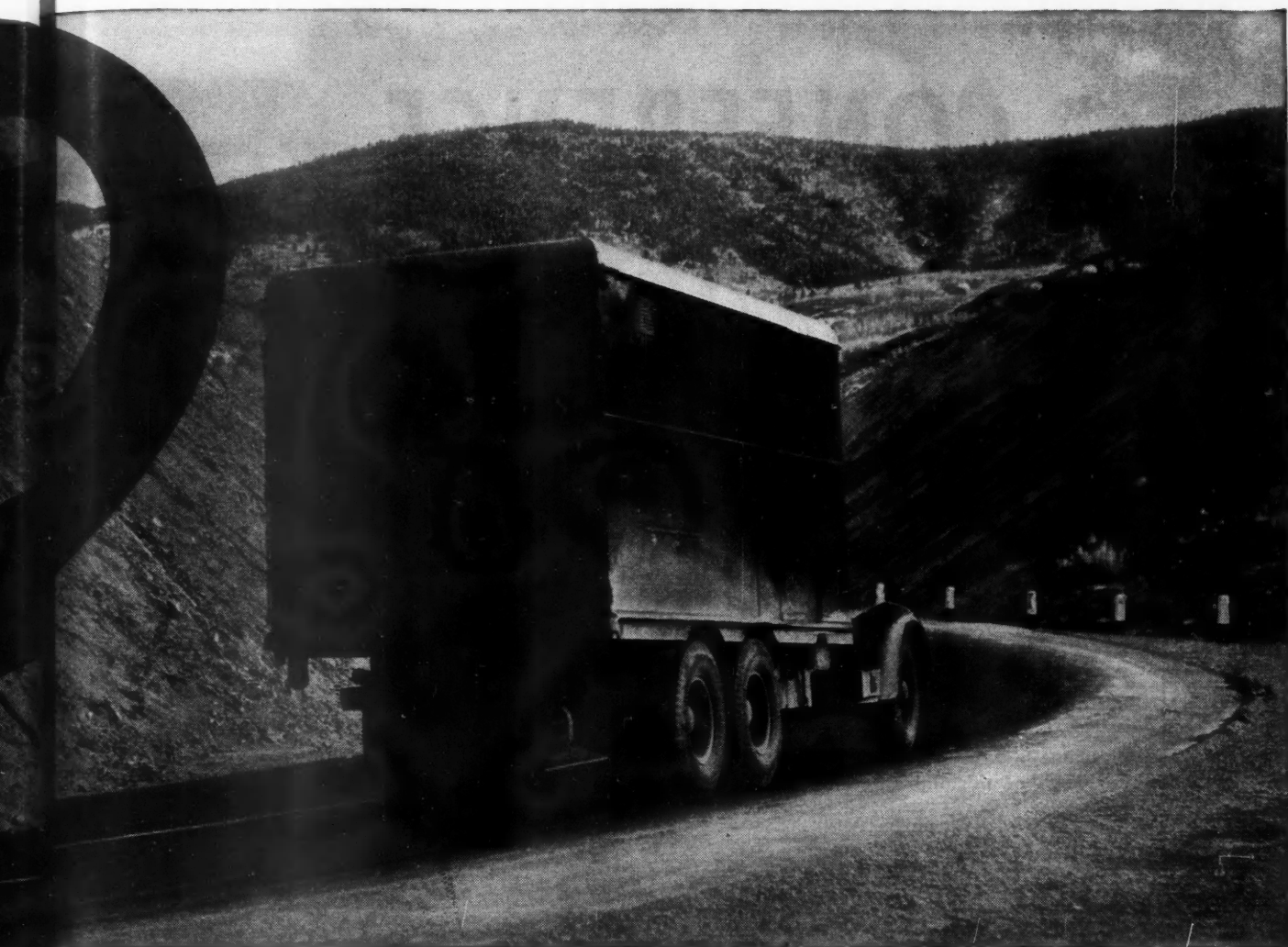


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lubricate with *Texaco Marjak*. It gives longer-lasting protection because it won't jolt or squeeze out of bearings. Lubricate wheel bearings with *Texaco Marjak Heavy Duty*. No seasonal change is required.

A Texaco Lubrication Engineer will gladly work with you to increase fleet operating efficiency and bring down costs. Just call the nearest of the more than 2,000 Texaco Wholesale Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street,
New York 17, New York.

Lubricants and Fuels

FOR THE TRUCKING INDUSTRY

CONFERENCE C O R N E R

PRESENTING FACTORY ENGINEERS' VIEWS ON TIMELY SUBJECTS OF INTEREST TO FLEETS

Subject: Compression Rings

Question: What Causes Failure?...

How Can It be Corrected?

Manufacturers blame high pressures and temperatures, inadequate lubrication, poor fuels and lubricants, and detonation for much of this top ring trouble... suggest use of chrome-plated rings and reduction of loads.

Careful Ring Selection Should Help

by H. G. Braendel
Chief Engineer

Wilkening Mfg. Co.

FAILURE of the top ring occurs because of detonation at high engine speeds which in many cases is not audible due to the high intensity of other engine noises. The top ring collapses during detonation and finally breaks in fatigue. Higher fatigue resisting material such as our chrome plated C90 rings will extend the life but extremely high side wear may still occur because of the high relative motion between the ring and the sides of the piston groove as it collapses and rotates in the groove. It is very possible that leaving out the top ring as reported will eliminate the trouble in some cases this in effect reduces the compression ratio by .1 or .2, which may be enough to bring the operation under the critical range. The second ring, of course, also operates in the somewhat cooler region of the piston.

If this analysis is correct, the difficulty will be eliminated by increasing the octane number of the fuel employed by a fleet which is troubled by this type of failure. Piston ring design will not eliminate the failures but will extend the life. We are, for instance, making up some steel chrome plated top rings experimentally to determine what beneficial effects this will have in respect to this type of failure. Using deep section rings with high strength materials having a high modulus of elasticity should also help, because collapsing of the ring occurs at higher pressures or more severe detonating conditions.

Good Grades of Fuel and Oil will Cut Failures

by Paul S. Lane
Director of Research

*Muskegon Piston Ring
Co.*

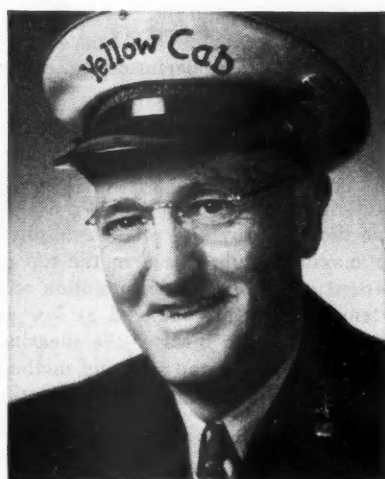
INSTALLATION of chrome plated top rings is the best and most economical first step to take in combatting ring wear. Such rings, if made from higher strength irons, have added resistance to breakage. However, certain conditions can come about which are abusive enough to shorten their life.

We believe that in the great majority of cases, ring breakage is preceded by sticking of the ring in the groove. We believe further that fuel of poor grade or "dirty," resulting in excessive combustion chamber and ring groove deposits, causes ring sticking. Considerable evidence supports the belief that certain combinations of fuel and lubricating oil can foul up a new engine in as little as 5000 miles as a result of sludging and oxidation. Bus operation with frequent idling and stop and go driving is conducive to more rapid sludging. Is it not true, too, that some fleet operators still use low-quality fuel and cheaper grades of lubricating oil, where actually better economy would be had if premium fuel and heavy-duty type oil were used.

It would seem likely, too, that detonation is a factor in ring breakage, particularly in the type of operation where the fuel is operated at low engine speeds with wide open throttle. Any condition which results in the accumulation of a great deal of heat in pistons and cylinder walls will shorten ring life. Detonation usu-

(TURN TO PAGE 10, PLEASE)

battery ever built...



EARL BENNET, Driver
Yellow Cab Company
San Francisco, Calif.

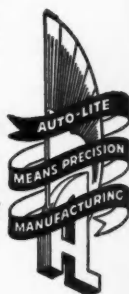


L. A. SCHROYER, Supt. of Maintenance
Yellow Cab Company
San Francisco, Calif.

"Sta-ful is the battery a taxicab driver needs to keep on schedule. When you keep battery plates fully covered, you get rid of the biggest trouble-maker we had. It's the best battery I ever saw!" This statement of Earl Bennet shows how our drivers go for Sta-ful." L. A. Schroyer, Supt. of Maintenance, Yellow Cab Company, San Francisco, Calif.

HERE'S WHAT Sta-ful DOES FOR YOU

- 1 Needs water only 1/3 as often.
- 2 Helps keep plates fully covered for abundant starting power.
- 3 Reduces time and bother of battery servicing—lasts longer too.
- 4 Helps reduce operating costs by keeping fleets on schedule.



Conference Corner

Continued from Page 6

ally means higher temperatures and pressures, all being in the direction of rapid deterioration of engine components.

Obviously, the solution lies in improved grades of fuel and lube oil to keep engine deposits to a minimum. The same is true for regular adjustments of the distributor and the entire ignition system. Air cleaners and oil filters are vital to good engine operation and must be serviced at regular periods. Particularly is this true for rear engine buses which require extra precautions to have an adequate supply of clean air and good cooling.

Our company has available heavy-duty type chrome plated compression rings made from high-strength alloy iron, and also oil control rings of the wide-slot streamline type to give maximum resistance to plugging. These same type rings are also available from several other reputable ring producers.

Chrome-Plated Top Rings Withstand Abuse

by G. E. Leutwiler
Chief Service Engineer

McQuay-Norris Mfg. Co.

THE reason, in our opinion, for the rapid wear on top compression rings is that they are located in the area where the greatest pressures are momentarily experienced when the explosion occurs. Likewise they are subjected to the highest temperature and marginal lubrication. Therefore they operate under the most adverse conditions and receive the most abuse. Consequently there is bound to be more rapid wear and occasional failure from breaking.

When operating conditions are not too severe due to overloading and high speed, the top ring groove wear and ring breakage usually does not become critical until the second 50- or 60,000 miles of operation. In other words, on a rering job if the wear in the top piston grooves has reached .005 to .008, the groove should be recut and a groove filler installed. Otherwise the new ring will not be properly supported so that vibration will be violent enough to either pound out the groove rapidly or break either the ring or the piston lands.

When breakage of either the ring or land occurs, the small pieces quickly wear away themselves or wear up through the top land so that they disappear by going out through the exhaust valve.

During the war years considerable work was done on rings for aircraft engines to overcome a similar problem. Centrifugally cast high tensile rings were chrome plated and used effectively in high output engines. We made millions of these rings, but our metallurgists found that for automotive service electric furnace cast iron was the superior material because of its heat stability.

Our electric furnace ring iron was made in many ways to improve scuffing and wear resistance. By increasing the phosphorus and reducing the silicon we accomplished a great deal to reach our goal. For long life under conditions of dust in the intake air we furnish our top rings chrome-plated.

Limit HP to 80% of Rating to Reduce Trouble

by M. W. Marien
Chief Engineer

Ramsey Corp.

THE industry has always been conscious of a certain amount of top ring and top groove trouble in heavy-duty internal combustion engines. The top ring difficulty is basically due to a combination of fire, excessive heat and lack of lubrication at the top part of the cylinder. Many improvements in piston rings, pistons, cylinders, and cylinder heads over a long period of years has resulted in better operation. However, this has been offset to a large extent by the engine designers' constant struggle for more horsepower from a smaller space. In general top ring and top groove trouble could be eliminated almost over night if operators would limit the horsepower out-put to 80 or 85 per cent of the rated horsepower. A large factor in the actual usable rating of an engine is the allowable temperature of the top piston ring and piston crown. When the horsepower output is such that this critical temperature is exceeded, then we are bound to have difficulty. Because of competition some truck and bus engines may be over rated or may not be big enough for the chassis in which they are used. Also you may well know that the satisfactory performance of an engine is greatly influenced by the driver.

With our products we are not too conscious of our top ring and top groove trouble in any phase of commercial operation. We believe that one reason for this is our principle of piston ring design. We design our piston rings so that blow-by and oil consumption are controlled for maximum lubrication in the top of the cylinder consistent with good oil consumption and so that top ring temperatures are reduced as low as possible. Our piston ring design involves the shearing method of oil control rather than the scraping method which minimizes the possibility of drying up the cylinder wall.

Porous Chrome Rings, Improved Pistons Help

by Lee Doty
Manager of Fleet Sales

Koppers Co., Inc.

WE are certainly aware of the problem of corrosion, erosion and rapid wear of top Compression rings and because of this situation and have developed Porous Chrome rings for use in top grooves, as well as K-Spun, a new high strength cast iron for use in all rings. The necessity for improvements in piston rings has been brought about by several factors—the increase in compression ratios, the reduction of engine weights as compared to horsepower, and the change in both fuels and lubricating oils during the past several years.

There has been one other improvement in design that is helping to correct this problem and that is the manufacture of pistons using a Ni-Resist grooved belt built into the piston and in which the top groove is machined. Our company is manufacturing the centrifugal castings for this ring belt and sells them to the piston manufacturers who furnish the completed piston to the trade. The stronger support furnished the ring by this belt has decreased wear and breakage of top rings to a minimum. We feel that this development will become rapidly popular for all heavy-duty uses.



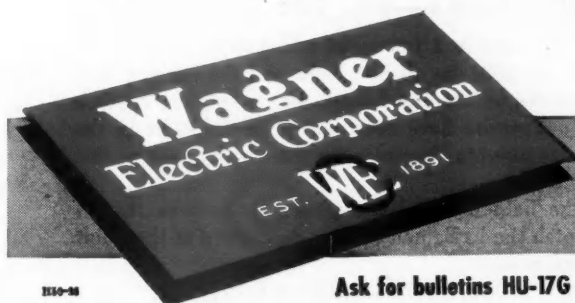
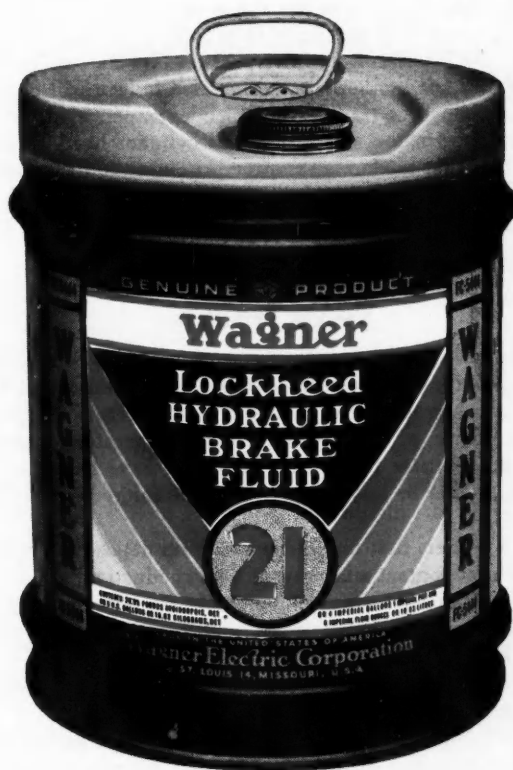
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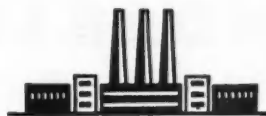
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Ask for bulletins HU-17G and HU-197... "HINTS ON BETTER BRAKE SERVICE"... FREE ON REQUEST.



SERVICE NOTES

Briefed for Fleets From Manufacturers' Bulletins

● IHC ●

IHC Slo-Roto Exhaust Valves

With RED and Continental 4-6586 engines using Slo-Roto exhaust valves seat width of the valve insert ring must be increased. This increased width of $3/32$ to $1/8$ in. ($1/8$ in. preferred) should be utilized when making installation of the Slo-Roto valves in RED engines. (Specified valve seat width for RED engines not using the Slo-Roto feature is $5/64$ to $7/64$ inch.)

The wider seat on the valve insert ring will provide increased valve life due to the larger contact area obtained when the valve is in a closed position, thus allowing a greater amount of heat to be transferred away from the valve head.

In conjunction with the above subject it is of utmost importance that the valve insert rings be installed so that the insert ring is fully pressed into its seat in the cylinder head, otherwise, early valve failure will occur. Maximum heat transfer is dependent upon a full contact between the insert ring and cylinder head. Make certain that no foreign matter prevents the insert ring from seating fully upon installation.

● FWD ●

Valve Troubles

Valves require grinding at various intervals during the engine service life. These intervals cannot be specified exactly because many variable factors enter the picture, often without the engine operator's knowledge. Of these factors, the following have been found to a greater or lesser degree to make for reduced valve life.

(a) Fuels that break down to form deposits that impair seat contact and prevent heat conduction.

(b) Deposits from either fuels or oils that accumulate on the valve stems and cause sticking and burning.

(c) Oil not reaching rocker arms due to clogged lines, improper fitting connections and so on.

(d) Shutting down a hot engine without idling for a few minutes. Exhaust valves that happen to be off the seat when engine stops may warp so that burning occurs on restarting.

(e) Tappet clearances not properly maintained to cold settings recommended.

(f) Lean mixtures due to improper carburetor or adjustment.

(g) Pre-ignition due to wrong plugs, carbon deposits, excessive operating temperatures.

● Federal ●

Crankcase Ventilator Valves

Occasionally we find the field has either removed the crankcase ventilator valve from the engine, thus eliminating any means of ventilation, or the servicing of the valve and connecting lines has been neglected.

The ventilator valve should be taken apart every 250 hours or 10,000 miles and washed in a varnish solvent. The connecting lines and fittings must receive the same treatment.

When reassembling valve, 1B1270, be sure the metering piston is inserted in the body with the small tip in the direction of the arrow stamped on the outside of the body. The same arrow also indicates the position of the valve in the ventilating system in relation to the intake manifold. The valve is always mounted in a *vertical position* and the end having the external thread is connected to the intake manifold. The opposite end connects to the opening provided at the tappet cover.

● Plymouth ●

New P-19 Clutch

A new $9\frac{1}{8}$ in. Borg and Beck clutch is used in the P-19 Models. The disc assembly of the new clutch can be identified by measuring the outside diameter which is $9\frac{1}{8}$ in. instead of $9\frac{1}{4}$. The pressure plate can be identified by the use of six heavier springs rather than nine, as on the $9\frac{1}{4}$ in. Borg and Beck. The new parts consist of the disc facings, the pressure plate casting and the pressure plate springs. All other parts are interchangeable with the $9\frac{1}{4}$ in. Borg and Beck Clutch. The $9\frac{1}{8}$ in. clutch can be adjusted on the Miller Tool fixture, C-585, with spacer No. 20 as used for the $9\frac{1}{4}$ in. clutch.

● Studebaker ●

Engine Noise—9G, 2R5, 2R10, 2R15

Engine noise in a few cases has resulted from interference between the oil pan baffle and the cheek of the No. 5 crank on the crankshaft. In production, a notch and a depression have been placed in the baffle in the oil pan to provide clearance for the crank cheek at this location.

In the field it will be necessary to remove the oil pan, notch the baffle and bend it downward at the point of interference.

(TURN TO PAGE 210, PLEASE)

The OVERLOAD

E D I T O R I A L C O M M E N T

Figures Don't Lie - - - But Some Remarkable Fellows Can Figure

LAST month on this page we highlighted some interesting developments in New Jersey wherein a recent survey indicated that only 50 miles of the State's 1780 trunk highway network were found in bad condition, despite a possible axle loading of 34,300 lb. We believed it of national significance.

This month we'd like to invite your attention to some developments across the border in New York state. While the shenanigans there are of an entirely different nature, their significance on a national basis is equally important since history reveals that New York state has frequently been used as a sounding board for developments to come in other states.

• • •

Late last year a resolution (#170) was introduced in the state Assembly by Assemblyman D. Mallory Stevens calling for an investigation of truck taxes based on several "Whereases," one of them being this typically rail-inspired beauty: "Whereas common carriers using the public highways derive far greater benefit from these highways than the ordinary citizen and make no special contribution to their construction or the cost of their rights of way." In due time the resolution was adopted, a legislative committee set up to investigate, and hearings have been under way.

But the development that caught our eye was this one: Up at the State Capitol is a group known as the Citizens Public Expenditures Survey of Albany. We are advised on reliable authority that this group is primarily interested in real estate taxes, and that it is considered a responsible organization which

regularly campaigns on the laudable subject of keeping the State budget for government expenses both balanced and down.

It was, therefore, only natural that this group seize the opportunity to stave off increased real estate taxes by hitting on the idea that trucks should pay a higher share of the *state's total income*. To further this aim they retained a firm of consultants on public administration and finance known as Griffenhagen and Associates, to study the matter of truck taxes and the part they pay in highway costs. We are advised that this firm, in years past, has made similar studies for at least one railroad company, but we are the last to hold that against them.

The Griffenhagen report, now on press, numbers no less than 400 pages covering such comparisons as ton-mile rates and a long section on tax diversion and subsidy. Since the report had not been published at the time this issue went to press we had not seen it. But if we may rely on the usually authoritative *New York Times* (Feb. 25, 1950) we'd like to quote just one sentence from the report which the *Times* saw fit to include in its editorial: "A big truck that paid an annual license fee of \$3,179 in Michigan would have to pay only \$140 in New York."

• • •

It is statements like that that make our truck operator friends in New York see red, and which we believe will, make others across the nation turn (SORRY—We'll have to continue on page 256)

Bart Rawson
Editor

**It's here!
the NEW**

HI-MILER RIB

TRUCK TIRE



20%-25% MORE mileage at no extra cost!

Now Goodyear presents a great new truck tire that will give you more mileage, more traction, more safety in today's highway hauling service. Improved throughout, this new Hi-Miler Rib Truck Tire delivers *premium performance at no extra cost!*

HERE'S WHY

More miles—20% to 25% more by road tests. New multi-rib, flatter and more compact tread design puts more rubber on the road, insuring longer, slower wear.

More even wear—from continuous shoulder

ribs in new cooler-running design, strongly buttressed for slow, even wear.

More non-skid—new zigzag ribs with more road-grabbing edges and new, flatter tread contour give greater skid-resistance.

Most for your money—highest quality construction throughout. New tougher, cooler-running rubber compounds, super-strong rayon cord body, spiral-wrapped dual beads all combine to make the new Hi-Miler a tire that will give you greater mileage and more recaps with far greater freedom from blowouts and road failures. Get it now—at all Goodyear dealers'.

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

**Buy and
Specify**

GOOD YEAR—it pays!

Hi-Miler—T.M. The Goodyear Tire & Rubber Company

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

ccj REPORTS

on News of the Industry

Third Highway Congress Surveys Transport Future

Representatives of national, state and local highway users groups meet in Washington's Hotel Mayflower April 25, 26 and 27, at the coming Third Highway Transportation Congress. The 30-million dollar question—will the public policies affecting highway transportation be as sound and well conceived during the coming half century as they generally have been during the industry's first 50 years? The program for the Congress will be one of the most interesting and significant ever arranged on highway matters, according to Director Arthur C. Butler, of the National Highway Users Conference, the organization sponsoring the meeting.

These Congresses, held every two years, give leaders in these groups and the industries that supply them a unique opportunity to express themselves on the policies which will help determine highway transportation's future. The importance of these policies is indicated by the fact that highway transportation is a \$30 billion annual business, responsible for one out of every seven jobs in the nation.

"Fifty Years of Highway Transportation Progress"

is the theme of the April sessions. The keynote address by N.H.U.C.'s Chairman Albert Bradley, executive vice president of General Motors, will examine highway transportation's opportunities as it begins a second half century of service to the American public. Like other nationally known leaders who will address the Congress, he will also look back and point to the ways in which the automotive industry has enriched America's life and broadened its economy during its first half century.

Other speakers already announced include Lee R. Jackson, president of the Firestone Tire and Rubber Co., who will speak on "Highway Transportation of Tomorrow," and Dr. J. O. Christianson, famous Minnesota civic leader, educator and agriculturist, whose topic will be, "The Roads Americans Travel."

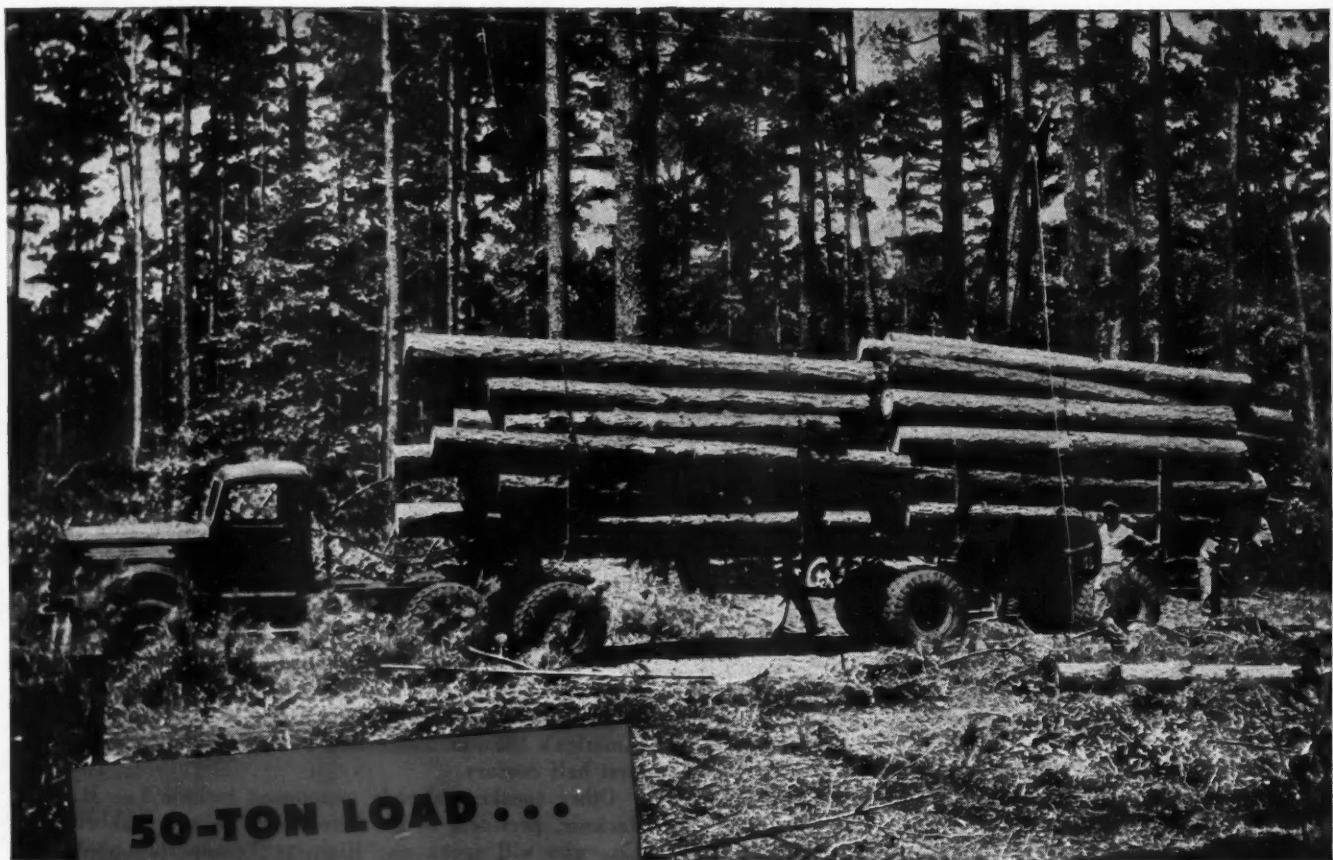
During the course of the Congress such problems as adequate planning to meet growing highway and street needs, equitable taxation, protection of highway taxes from diversion to other purposes, and many other matters will come before the delegates. These will be examined from the viewpoint of the actual user of the highway, as well as from that of officials and lawmakers.

(TURN TO PAGE 192, PLEASE)

DATES and DOINGS

APRIL 10-14—Fleet Supervisors Training Course, University of Wisconsin, Madison, Wis.
APRIL 14-15—Louisiana Motor Transport Assn. Annual Convention, Bentley Hotel, Alexandria, La.
APRIL 17-21—Fleet Supervisors Training Course, University of Tennessee, Knoxville, Tenn.
APRIL 22-23—Motor Vehicle Assn. of Georgia Annual Convention, General Oglethorpe Hotel, Savannah, Ga.
APRIL 24-28—Fleet Supervisors Training Course, University of Michigan, Ann Arbor, Mich.
APRIL 24-28—Fleet Supervisors Training Course, University of Maryland, College Park, Md.
APRIL 25-28—New England Regional Automotive Show, Inc., Mechanics Building, Boston, Mass.
APRIL 26-27—3rd Highway Transportation Congress of National Highway Users Conference, Mayflower Hotel, Washington, D. C.
APRIL 27-29—American Trucking Assn. National Tank Truck Carriers Conference, Palmer House, Chicago, Ill.
MAY 1-5—Fleet Supervisors Training Course, Iowa State College, Ames, Iowa.
MAY 4-6—Texas Motor Transp. Assn. Annual Convention, Banker Hotel, Dallas, Texas.
MAY 8-12—American Trucking Assn. Spring Meeting, Hotel Morrison, Chicago, Ill.
MAY 8-12—Fleet Supervisors Training Course, So. Dakota State College, Brookings, S. D.
MAY 11-13—Washington Motor Transport Assn. Annual Convention, Olympic Hotel, Seattle, Wash.
MAY 15-19—Fleet Supervisors Training Course, Northeastern University, Boston, Mass.

MAY 18—Rhode Island Truck Owners Assn. Annual Convention, Naragansett Hotel, Providence, R. I.
MAY 22-26—Fleet Supervisors Training Course, University of Connecticut, Storrs, Conn.
JUNE 1—Central Motor Freight Assn. Annual Convention, Palmer House, Chicago, Ill.
JUNE 1-3—Utah Motor Transport Assn. Annual Convention, Hotel Utah, Salt Lake City, Utah.
JUNE 4-9—Society of Automotive Engineers Summer Meeting, French Lick Springs Hotel, French Lick, Indiana.
JUNE 5-9—Fleet Supervisors Training Course, University of Kentucky, Lexington, Ky.
JUNE 12-16—American Society of Mechanical Engineers (4th Annual Materials Handling & Exhibit) International Amphitheater, Chicago, Ill.
JUNE 12-16—Fleet Supervisors Training Course, Marshall College, Huntington, W. Va.
JUNE 19-23—American Society of Mechanical Engineers, Hotel Statler, St. Louis, Mo.
JUNE 23-24—Pennsylvania Motor Truck Assn. Annual Meeting, Penn Harris Hotel, Harrisburg, Penna.
JUNE 26-30—Fleet Supervisors Training Course, University of New Hampshire, Durham, N. H.
July 10-14—Fleet Supervisors Training Course, Northwestern University, Evanston, Ill.
Aug. 14-16—Society of Automotive Engineers (West Coast meeting) Biltmore Hotel, Los Angeles, Calif.
OCT. 2-6—American Trucking Assn. Annual Meeting, Waldorf-Astoria Hotel, New York.
DEC. 4-8—Automotive Service Industries Show, Navy Pier, Chicago.



**50-TON LOAD ...
TOUGH ROAD ...**

*Hoobler Undercarriage
takes them easy!*



The Hoobler-equipped trailer pictured above is hauling 7,231 feet of pine logs, weighing almost 100,000 pounds. The punishing, twisting travel through this unpaved, heavily wooded area is enough to stop an ordinary trailer in its tracks.

But not this Hoobler-equipped trailer. For the Hoobler Undercarriage causes the trailer to "follow through" behind the tractor... to snake

Hoobler-equipped lumber trailer now built as standard unit (Model T-4000) by Birmingham Manufacturing Co., Birmingham, Ala.

around difficult turns with "outrigger" stability for the load.

That's not all. The Hoobler Undercarriage's nine-foot axle spacing affords ideal weight distribution and prevents bogging down: There's minimum load shifting, because flexible, multiple support absorbs practically all road bumps.

Simple in design and construction, the Hoobler Undercarriage is quickly inspected or serviced. It is designed for use with standard brakes, axles, wheels and tires.

Vans, high-sides, tankers and flat-tops (28 feet and over) use this self-steering undercarriage—off-the-road and on-the-road. And at lower operating cost per ton-mile!

Find out how the Hoobler Undercarriage can help *your* jobs roll easier, safer, and save you money, too. For complete information, write The Union Metal Manufacturing Company, Canton 5, Ohio.

UNION METAL

DESIGNERS AND PRODUCERS OF STEEL PRODUCTS SINCE 1906

Builder of The Hoobler Undercarriage

DETROIT DISPATCH

by LEN WESTRATE Detroit News Editor

California Muffler Noise Tests Watched

Truck manufacturers are watching the outcome of tests being made in California on muffler noise on diesel units. Basically the muffler problem is one of cost. It is entirely possible to equip a truck with a muffler that will maintain a suitable noise level, but the cost is considerably higher and fleet operators object to paying it, according to manufacturers. They point out, also, that some drivers are a problem because they like the snort and roar of a poor muffling system, and have been known in some cases even to punch holes in the system to get the desired sound effects. The general feeling is that if operators and manufacturers do not get together on a satisfactory muffler, legislation is bound to come that will do the job for them.

AMA Defines G.V.W.

Since the general adoption of gross vehicle weight ratings, there has been some confusion in the minds of many operators about just what the term means and why it was adopted. Automobile Manufacturers Association now has printed an interpretation of the manufacturers maximum g.v.w. rating. Copies are available upon request. It explains just what the rating means and gives the history behind its adoption including the relationship to state licensing procedures. Address of AMA is 320 New Center Building, Detroit 2, Mich.

The K-H Braking System

Kelsey-Hayes is making good progress on its new auxiliary unit for use with vacuum brake systems on tractor-trailer combination. Initial installations are being made in the Detroit area to get more information on adapting the unit to all types of trailers. The production program is not yet far enough along to offer the auxiliary system on a national basis but, as more operating experience and manufacturing facilities are obtained, distribution will be widened.

The K-H auxiliary system, which has been under test by two large fleets for more than a year, is designed to apply automatic initial braking on the rear wheels of the trailer unit before the tractor brakes come into play, thus guarding against jack-knifing. It consists of a pedal switch, load switch, relatively small vacuum reservoir, a quick acting vacuum switch, and a third vacuum chamber. The regular vacuum braking system of the trailer remains intact.

The first half inch of foot pedal travel actuates the system through the electrical switch which opens the quick-acting valve, applying brake pressure through full vacuum of the small extra reservoir. The pull-rod is linked through an equalizer to the regular braking system which automatically goes into action with further movement of the brake pedal. A slight touch of the pedal gives the "feathering" action on rear brakes ordinarily attained through a hand lever on the steering column. An added feature is that for heavier loads, a selector switch on the instrument panel may be set to use both the auxiliary reservoir and the main system tanks for extra power. On tandem axle installations a larger reservoir and an extra chamber are used.

Ordnance Okays a 24-Volt Ignition System

Military services appear to be winning out in their insistence on 24-volt ignition for Army vehicles. Industry manufacturers, while not actively opposing the high voltage systems had held that such equipment was not available and that further time would be required to develop it. However, at least one manufacture of electrical equipment has developed a 24-volt system that has passed severe Ordnance Department tests, and has been accepted as original equipment on military vehicles. General opinion, however, is that the high voltage systems are not necessary in commercial vehicles and would be ruled out by the extra cost. There also might be some problems with standard lighting equipment, such as bulb filaments.

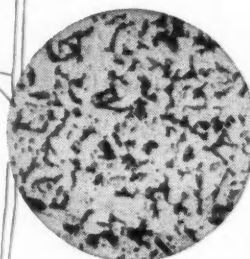
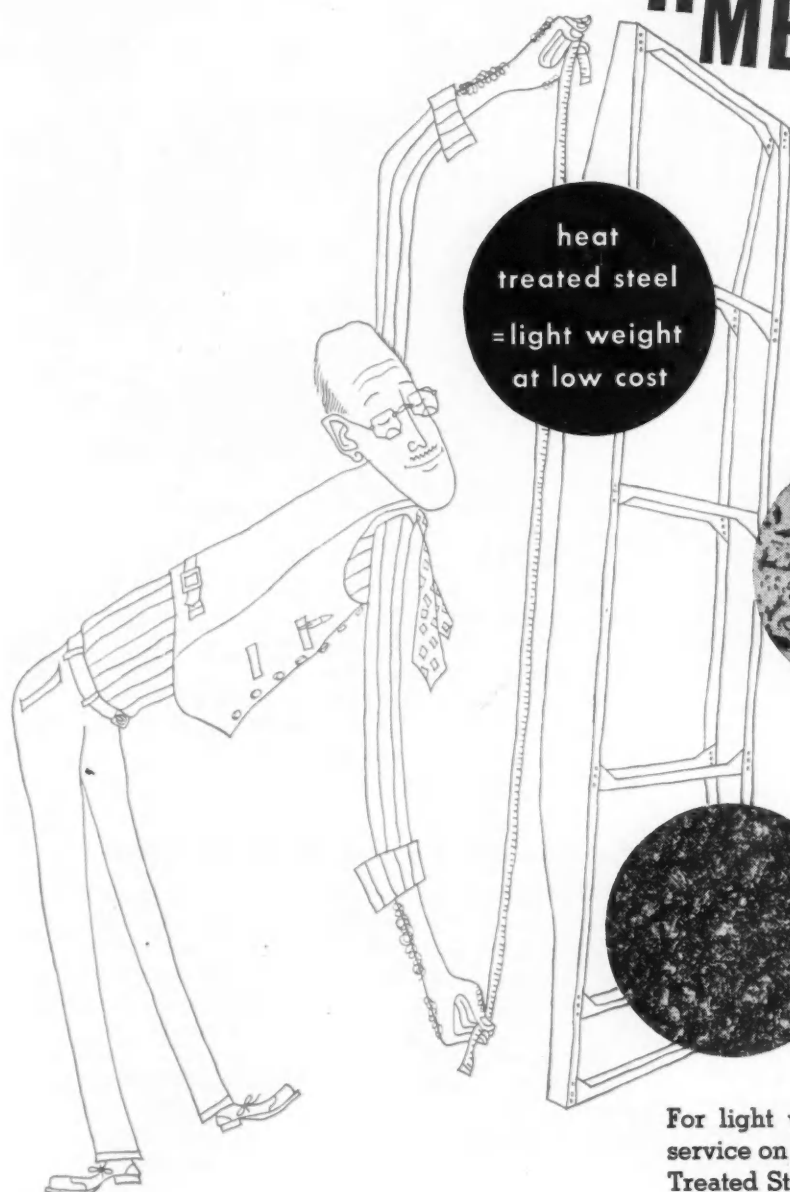
GMC's "New Horses" Gets Results

GMC Truck currently is running a novel campaign aimed at getting fleet operators to bring their GMC trucks in for tune-up servicing. They are advertising "new horses" at \$1.17 a piece. Essentially the program consists of a chassis dynamometer test at one of the 17 branches thus equipped in various parts of the country. After a complete tune-up, a new dynamometer reading is made and the charge is \$1.17 for each horsepower gained from the tune-up. Gains up to 15 horsepower are charged for at the established rate, and any in excess of that are free. Reports from the field show many cases of even relatively new trucks obtaining considerable improvement from the program.

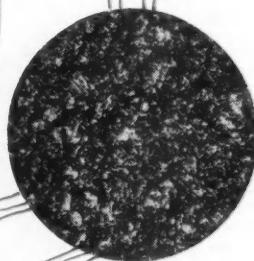
(TURN TO PAGE 252, PLEASE)

HOW DO YOUR FRAMES

"MEASURE UP"?



BEFORE heat treatment, note the coarse-grained structure of the steel.



AFTER heat treatment the steel is stronger, with a fine grain structure that permits thin side rail design.

For light weight frames that measure up in years of service on heavy duty trucks, you can't beat Parish Heat Treated Steel Frames.

These photos tell the story. By using *heat treated* steel, we can design thin section side rails to hold down tare weight.

For frames that give you maximum strength and resistance to fatigue—at no sacrifice of payload—ask your truck manufacturer about Parish *Heat Treated* Steel Frames.

USEFUL BULLETIN for MAINTENANCE MEN... To give your men in the shop the "know how" they need for welding heat treated steel frames, ask for the Parish Welding Bulletin. It gives useful hints on kinds of weld wire to use, positioning of work, etc.



ONLY PARISH STEEL



HEAT TREATED HEAVY DUTY FRAMES GIVE YOU THE STRENGTH OF STEEL

at no sacrifice of payload!

PARISH PRESSED STEEL COMPANY
subsidiary of Dana Corporation **READING, PA.**

Western Representative: F. SOMERS PETERSON CO.
524 Folsom St., San Francisco, Cal.
413 East 12th St., Los Angeles, Cal.

WASHINGTON RUNAROUND

by GENE HARDY Washington Correspondent

\$66 Million Replacement Program

A breakdown of proposed military vehicle purchases during the 12-month period beginning July 1 reveals an intention to purchase a wide selection ranging from over 3,000 jeeps to 4 new 10-ton 6 x 6 trucks. These prototype 10-ton jobs will cost an estimated \$60,000 each.

The overall motor vehicle procurement program, calling for 18,704 vehicles estimated to cost about \$66 million, is part of the auxiliary vehicle-replacement plan. The only exceptions are the 10-ton vehicles and 485 small tank trailers.

Details of the proposed program are as follows:

Technical vehicles	Quantity	Unit Cost
Ambulance, 3/4-ton, 4 x 2	16	\$3,375
Carrier, personnel, 4 x 2	1,000	1,219
Truck, 1/4-ton, 4 x 4	3,467	2,689
Truck, 3/4-ton, 4 x 4	1,752	4,511
Truck, 2 1/2-ton, 6 x 6	3,285	6,424
Truck, 5-ton, 6 x 6	562	15,324
Trailer, 1 1/2-ton, 2-wheel, tank, water	485	1,000
Truck, 10-ton, 6 x 6	4	60,000

Commercial vehicles	Quantity	Unit Cost
Truck, 1/2-ton, 4 x 2	3,474	\$1,282
Truck, 1 1/2-ton, 4 x 2	1,325	1,836
Truck, 2 1/2-ton, 4 x 2	2,615	2,575
Truck, 5-ton, 4 x 2	619	4,348
Bus, 37-passenger, 4 x 2	100	14,100

The unit costs for tactical vehicles include concurrent spare parts, while those for the commercial-type vehicles do not.

Federal Plan on Sizes and Weights

Dropped in the congressional hopper in recent weeks was a measure which would put the Federal Government squarely into the arena of motor vehicle size and weight legislation. Presented by Rep. Herlong, D., Fla., H.R. 7637 would give motor carriers, shippers, etc., the right to appeal to the ICC for relief in cases where existing size and weight regulations constitute unreasonable obstructions to interstate movement of motor vehicles. ICC would be empowered to impose size and weight regulations which would remove such "obstructions." Admirable in policy, like so many other pieces of legislation, this one does not have the chance of the proverbial snowball during the

present session. Still, it must be pointed out that only by constant pressure for action along these lines will anything ever be done in this or succeeding sessions.

G.I. Vehicle Replacement Standard

Officials in charge of motor vehicle operations in the various government agencies have under discussion a table of minimum replacement standards for commercial standard trucks varying from 17,000 lb gvw to 28,500 lb gvw. Replacement standards for passenger cars and trucks up to 15,000 lb gvw are already in effect (CCJ, Dec '49, pg 42).

These standards, prepared by the Interdepartmental Motor Equipment Committee of the Budget Bureau, will probably become effective within a matter of weeks. The proposed replacement standards are as follows:

Maximum gvw (pounds)	Total Years	or	Total Miles
17,000	7		60,000
20,500	8		65,000
24,500	9		71,000
28,500	10		80,000

Covering the medium class of commercial vehicles, these standards along with those already in effect, will blanket the major portion of the vehicles operated by civilian agencies of the government. The truck standards do not cover construction vehicles, such as dump trucks, which are conceded to be in a special category. Additional standards for heavier commercial standard trucks will probably be promulgated eventually.

Senate Transport Hearings Underway

The subcommittee on domestic land and water transportation of the Senate Interstate and Foreign Commerce Committee headed by Senator Myers, D., Pa., began its long-awaited series of public hearings on the nation's transportation problems late last month. The subcommittee opened its sessions by hearing testimony from railroad representatives. Motor carriers, water carriers, and pipelines are scheduled to follow in this order.

At the outset of the hearings it was thought that motor carriers would not begin their testimony until some time during the middle of this month. Senator Myers has stated that it is hoped that these hearings, plus the information developed by his staff (CCJ,

(TURN TO PAGE 248, PLEASE)

Another Crescent Innovation!

CRESCENT-WIRY JOE MAROON PLASTIC CABLES

CRESCENT LEADS AGAIN! Now, the famous Crescent-Wiry Joe Maroon Cables are *plastic* to make them even better than ever before!

These advantages of plastic are universally established:

- **PLASTIC** is impervious to oil, water, grease, heat, abrasion, *and is highly resistant to acid.*
- **PLASTIC** is extremely flexible.
- **PLASTIC** does not support flame.
- **PLASTIC** is modern.

Add these features to the already outstanding list of Crescent-Wiry Joe Maroon Cable features and you have the *new* CRESCENT-WIRY JOE

MAROON PLASTIC CABLES!



✓ Check
the wire
on every
job!

WHEN NEXT IN OUR NEIGHBORHOOD, DROP IN—SEE HOW CRESCENT-WIRY JOE AUTOMOTIVE CABLE IS MADE FROM COPPER TO FINISHED PRODUCT IN ONE PLANT UNDER ONE ROOF

The president of Fleety Fleet Motor Express and his Safety Director hurriedly drove down to a small mountain town in Tennessee, where one of their drivers had been jailed on a serious charge as a result of a highway accident.

Pausing at the ramshackle courthouse in an effort to retain legal help, the Safety Director approached a white-bearded old codger who sat drowsing on the steps.

"Do you have a criminal lawyer here?" he asked.

"We think so, young feller," the old-timer said as he squinted upward, "but we ain't proved it on him."

CCJ

Slim 'n Greasey, our elongated shop roustabout, says: "A bachelor is a man who possesses the ability to have a girl on his lap without having her on his hands."

CCJ

Steno Lou: "Why haven't you been wearing those gorgeous lacy underthings that you got for Christmas?"

Steno Sue: "Oh, I've been saving them for the windy days of March!"

CCJ

IN GOLF, IT'S DISTANCE.

IN A CIGARETTE, IT'S TASTE.

IN A CROSLEY—IT'S IMPOSSIBLE.

CCJ

Catty Cora, our cute office cut-up, used to like a cocktail now and then. The other day, though, she told us she was forced to give up drinking because she was afraid it might turn into *would* alcohol.

CCJ

Weavin' Willie, our City Driver, was attending a house party. As he stood in a corner, a large woman with a plate of small cakes bore down upon him. "I'm your hostess," proclaimed the lady. "Could I interest you in a hot cookie?"

"No thanks," said Willie, "I brought my date along."

CCJ

The ex-G. I. had just been married a year and he was having a rough time making ends meet on the compensation he received as a Maintenance Trainee. His young wife, a clothes-conscious blonde beauty, had never learned the value of a dollar. She would go out and buy a new hat, coat or dress at the slightest provoca-

tion. Finally, her long-suffering husband blew his top.

"Barbara," he moaned, "you promised you wouldn't buy another new dress until you consulted me. What made you do it?"

"Dear," replied his little wifey, "the devil tempted me."

"Why didn't you say: 'Get thee behind me, Satan?'" the harassed hubby inquired.

"I did," his extravagant bride replied sweetly, "and then he whispered over my shoulder: 'My dear, it fits you just beautifully in the back.'"

CCJ

GREASE MONKEY: "WHAT'S GOOD FOR MY WIFE'S FALLEN ARCHES?"

SHOE MERCHANT: "RUBBER HEELS."

GREASE MONKEY: "WITH WHAT?"

CCJ

Steno Lou: "How did you like that big, handsome Truck Dispatcher I got you a date with last night?"

Steno Sue: "He did all right in the pinch, but he would be a bigger success if he had more horsepower and less exhaust."



LAUGH IT OFF

Safety Sadie, our studious statistics gal, says she overheard this conversation the other day:

"Are the hot wires ready?" came the stentorian voice.

"Yes, Master, red hot!"

"Is the oil boiling?"

"Yes, Master, searing hot!"

"Is the victim tied securely?"

"Yes, Master, she can not move."

"Is the shroud over her?"

"Yes, Master, everything is in readiness."

"Okay, then give her the two dollar permanent!"

CCJ

The long distance van driver was laid up with a bad case of influenza. The student nurse who had been caring for him was not very bright. One day, when the doctor came for his regular examination of the sick truckie, he asked, "Nurse, what was this man's temperature at the onset?"

"Gee, I don't know," replied the nurse looking confused. "I've been taking it by the mouth."

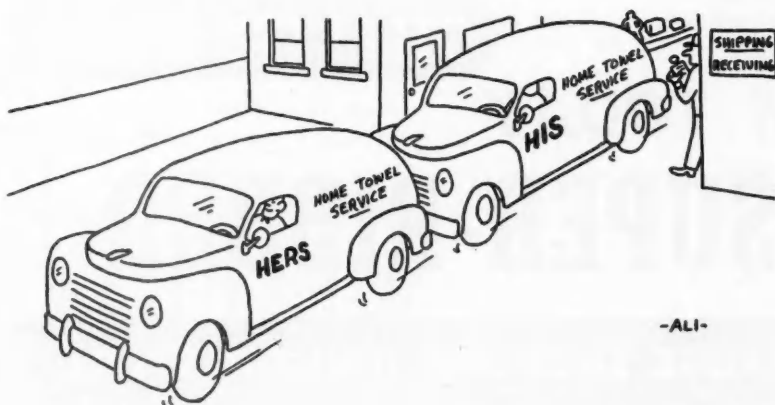
CCJ

THE TRUCK DRIVER IS SAFER WHEN THE ROADS ARE DRY;
THE ROADS ARE SAFER WHEN THE TRUCK DRIVER IS DRY.

CCJ

The Safety Director was escorting his little five year old son through the Zoo. Finally, he and little Johnny stood before the cage of the spotted leopard staring intently. Sizing up the situation very carefully, Johnny turned to his father and asked: "Say, pop, is that the dotted lion that everybody wants you to sign on?"

RESUME WORK



FLEET OPERATORS CALL IT...

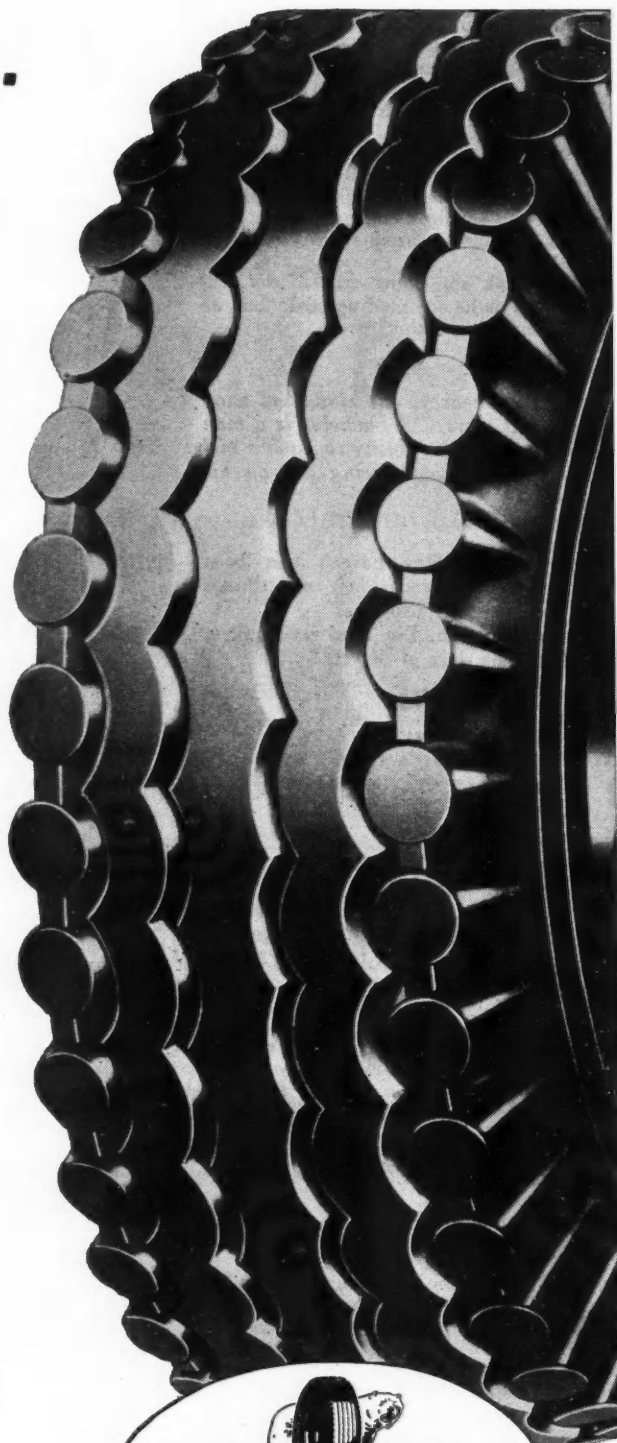
WORK HORSE

IN PERFORMANCE...

Fleet Operators tell us the GILLETTE Super-Ribbed is the hardest-working, longest-wearing highway truck tire they have ever used. They mention particularly its ability to stand up to the toughest, hottest runs without failure or fatigue — its ability to withstand groove-cracking and cut growth — and the high percentage of GILLETTE Super-Ribbed recaps. It's the one right combination of performance and mileage.

IN DESIGN...

GILLETTE Super-Ribbed performance is no accident! It was designed and manufactured for Super Highway Performance! GILLETTE's exclusive, connected-button design on each shoulder reduces heat in the critical area. Super-Ribbed runs cooler, safer, with fewer failures and gives more recaps. The curved grooves between the tread ribs minimize groove-cracking and cut growth. Special GILLETTE design features, plus the all-rayon construction and highest standards of craftsmanship, add up to your biggest value in truck tires.



GET THEM TODAY
GILLETTE SUPER-RIBBED

WEAR BETTER BECAUSE THEY ARE BUILT BETTER!

**For the jobs requiring
Power - plus - Traction**

— you need

WALTER **FOUR-POINT
POSITIVE DRIVE**

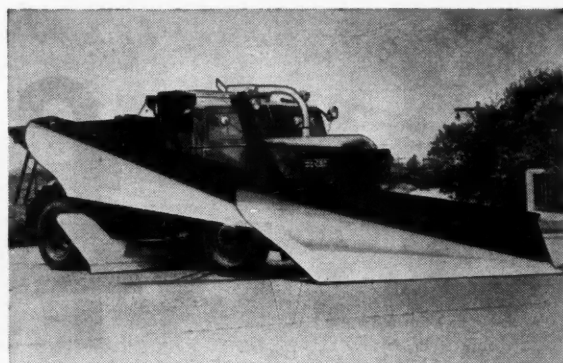


ON or off the highway—on snow, ice, mud, sand, soft dirt, steep grades—Walter Snow Fighters and Tractor Trucks keep going fast and unfailingly. They are the only trucks with the famous 4-Point Positive Drive which provides 100% positive traction in all four driving wheels. Patented torque proportioning differentials automatically concentrate most power on the wheels having most traction at all times. All the horsepower is converted into haulpower—none is wasted on spinning wheels, as in conventional drives.

Set-back front axle gives balanced weight distribution, short wheelbase, easy maneuvering. Other features include suspended double reduction drive, tractor type transmission, power hydraulic steer, air brakes, rugged construction throughout.

See your Walter dealer—or write for literature.

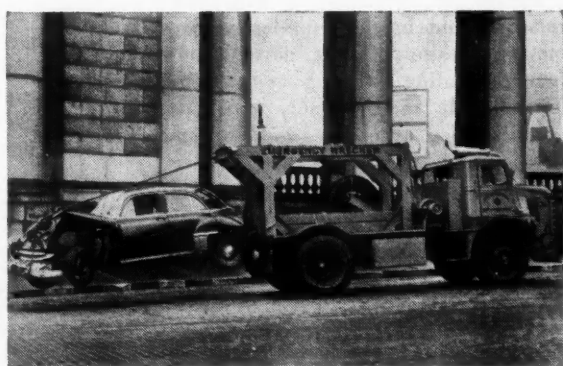
WALTER
TRACTOR TRUCKS



WALTER SNOW FIGHTERS clear at higher speeds, remove more snow, open deepest drifts because of their non-slip pushing power on snow and ice. Model shown does four jobs—plows at high speed, widens and levels banks, scrapes hard-packed snow and ice, automatically spreads sand and chemicals. Many other models, up to 250 hp., with plow and wing equipment to meet every need.



PUBLIC UTILITIES find the unfailing traction and compact design of Walter Tractor Trucks indispensable for earth boring, cable reel hauling and maintenance equipment. On or off the highway, in all kinds of weather, these Walter units can be depended upon to get to location. Wide choice of engine power and chassis lengths to meet any requirements of load or body style.



12-TON WRECKER shown, demonstrates the amazing stability of Walter balanced weight construction. The wrecked car, completely suspended, was hauled several miles through crowded traffic, without weaving. Twice the load could have been handled. This tremendous capacity, plus the 100% traction for all-weather emergency conditions, make the Walter the ideal truck for wrecker service.

WALTER MOTOR TRUCK CO. 1001-19 Irving Ave.
Ridgewood 27, Queens, L. I., N. Y.

free PUBLICATIONS

A selected list of the latest literature —
catalogs, pamphlets, charts—chosen to help
fleetmen improve operation and maintenance.

FOR CONVENIENCE • USE THIS POST CARD

L18. Truck Refinishing

This 30-page, illustrated publication on truck and auto refinishing is the result of practical experience and surveys made by a leading manufacturer in this field. Valuable information is offered for better planning and operation of the paint shop. The manual features such pointers as shop designing, equipping, operation instructions, cost controls, management, etc.

Instructions include such subjects as removing old finishes, preparing bare metals, masking, priming, puttying, surfacing, sanding, striping and chrome finishing. In addition such procedures are discussed as engine, radiator and tire painting. Special instructions cover the technique of spray gun sign painting, and photographs show proper handling methods for the gun.

Of special interest to fleetmen will be the section on Shop Tips, a full page devoted to practical service instructions designed to produce a better refinishing job.

This manual is published expressly to aid the shop in producing quality work at highest efficiency. It is well worth considerable time and study. Available free for the writing of L 18 on the accompanying postcard.

L19. Oil Condition Chart

A unique device which provides a

simple and efficient check of oil and engine condition, is effectively solving an operating problem for fleet owners.

A handy chart on which vehicles are listed, this Lubri-Graf gives visual proof of the operating efficiency of engines—shows which ones are contaminating oil and eating up cartridges too fast. Lined up with each vehicle's number on the chart, 31 indicator spots are provided for daily check of the monthly operation. The dipstick is touched to the proper indicator spot. If oil obscures the color dot, it's time to change the cartridge.

Fleet operators are finding that this simple device, which forearms before trouble develops and points out vehicles due for overhauls, is effecting substantial economies in fleet operation. Write L 19 on the free postcard for a copy.

L20. Shopman's Library

A miniature "shopmen's library" for the factory or metal-working plant is being offered by the government. Such fields as grinding, milling, spinning, honing, and tapping; soldering, brazing and welding; working with plastics and alloys; plating and finishing; care and maintenance of equipment; are encompassed in a collection of 54 technical bulletins originally prepared for National Defense Department shops.

Papers currently available cover the machining of aluminum alloys, tapered

workpieces, corrosion, dust control, types and uses of cemented carbide cutting tools, lubrication of machine tools, increasing utilization of shapers, and modern applications of the oxyacetylene torch.

Additional titles completing the series of 54 will be printed in accordance with demand. A combined order blank and reservation form is available on request. An "Industrial Notes Circular" may be obtained by writing L 20 on the postcard.

L21. Light Reading

In an illustrated 24-page booklet, "Mountains of the Moon," a noted explorer outlines the story of the preparation for his travels and the establishment of the expedition's eight main camps in British East Africa.

The booklet features eight pages of brilliant full-color photographs. Its text pages are liberally sprinkled with black and white pictures and a sketch map of the long journey. The Kodachrome illustrations, sixteen in number, show native warriors, animals, African landscapes and exotic birdlife. The black and white photographs show similar subjects plus scenes of camp life and procedure. The photographs are chosen from 10,000 taken during the course of the expedition. Free copies may be obtained by writing L 21 on the free postcard.

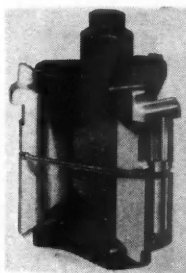
New PRODUCTS

Illustrating and reviewing newest developments

in parts, accessories, shop equipment and tools.

For more information use the attached postcard.

P98. Ridge Reamer



Model 2100 ridge reamer, range 2 9/16 in. to 4 3/4 in., has a special long-life carbide cutter which will remove the ridge, with just a few turns,

from steel sleeved cylinders as well as general automotive cylinders. It has positive three point centering and the operator can check for ridge removal without removing the tool from the cylinder. Ammco Tools, Inc., No. Chicago, Ill.

99. Valve Tool

A new valve keeper inserter has been designed especially to replace the small size keepers in the 1949 Ford engines and others which use the new small size keepers.

Made of high tensile aluminum alloy the tool is light enough to support itself on the valve stem, leaving both hands free to work the lifter or compressor. Only 8 3/16 in. long, the tool weighs 2 oz. K-D Mfg. Co., Lancaster, Pa.

P100. Aro Lubricator

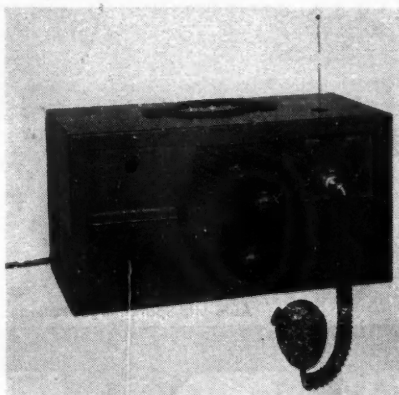
A new Aro "Thrifty-Fifty" portable lubricator has a full size pump to provide fast and thorough grease jobs. It is particularly suited for the fleet owner who requires spare units.

It is powered by a double-acting type pump with 36:1 piston ratio delivering

up to 6000 lb grease pressure. An automatic oiler keeps pump lubricated. Swivel on control handle allows 360 deg. rotation horizontally and vertically. Control nozzle is dual action type, giving operator choice of controlled shot or continuous flow. The Aro Equipment Corp., Bryan, Ohio.

P101. Radio Station

Carfone Station Unit "15," a portable transmitter-receiver, smaller than an overnight case, is used as headquarters station equipment in mobile communications systems operating in the 152-174-megacycle range. The streamlined unit weighs 44 pounds. It has improved selectivity which eliminates unwanted adjacent channel signals. On the transmitter side, the unit is equipped with a full-signal modulation



control. This circuit transmits the full signal potential of the transmitter and automatically assures excellent modulation.

This unit is housed in a single all-

metal cabinet approximately 20 in. long, 11 in. high, and 9 in. deep, with all controls on the front panel. The panel and the antenna connection are recessed in the housing for protection during transit. For permanent installation, the equipment is placed, and a cable run to the antenna. For portable use, the antenna is plugged into the connector at the top of the cabinet. The transmitter has a power output of 15 watts and operates on 115 volts, 60 cycles, ac. RCA, Camden, N. J.

P102. Battery Charger



The Thermaster thermostatically-controlled battery charger can fast charge one battery or slow charge one to six batteries. It is equipped with a husky transformer and a dry disc rectifier to provide a 100-amp charging rate. An

additional feature is an after fast-charge and after slow-charge battery condition tester.

The thermostat shuts the charger off when the temperature of the battery electrolyte reaches 125 deg, and before the battery can be damaged by excessive heat. It also automatically adjusts the charging period for the size, temperature and state of discharge of the battery. Willard Storage Battery Co., Cleveland, Ohio.

(TURN TO PAGE 222, PLEASE)

Here's help in

Delivers
**LOWEST
COST
PER MILE**
of spark plug
operation



Auto-Lite Spark Plugs—Patented U.S.A.

AUTO-LITE

Our Horn Toots Does Yours?

With what might be termed a pardonable dash of pride Commercial Car Journal presents in this fourteenth edition of the Fleet Operators' Reference Annual more than 100 pages of authenticated reference data of value to truck and bus operators throughout the year to come. Among this material, which covers virtually every phase of fleet operation, are more pages of specific maintenance data than have ever before been assembled within the covers of a single magazine.

We'd like to dwell on that maintenance section for just a moment. It begins on this page. Nowhere else in the industry can so much service and maintenance data be found. Aside from its physical size and the extent of its coverage, we also have labored to give it top quality. No effort has been spared to make it accurate and authentic . . . as if it came to you direct from the manufacturers' own engineering and service departments. Just to bring it up to date from last year took a good many personal contacts, hundreds of letters, telegrams, long-distance telephone calls and a whole lot of just plain sweat.

Together with previous issues which cover older models (and which gives us the opportunity to remind you that these April issues are worth saving), it gives you basic service data on virtually every truck and engine now in service. Last year we added data on popular passenger cars used by fleets. This year, the section includes similar information on every current production integral-type American bus.

Of course, you will find a great deal of information other than maintenance. You will find pages of basic statistics of the industry beginning on Page 115, and you will find more pages dealing with what we choose to call "Selection and Operation" beginning on Page 121. This includes data on power ratings, transmissions, third-axles, safety requirements, state sizes and weights, diesel fuel, bus and truck specifications, engineering formulas, etc.

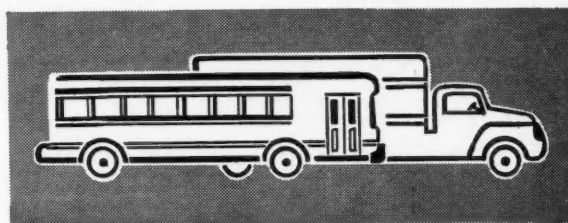
So to you, Mr. Fleetman, who actually maintains and operates the vehicles of your fleet—whatever your title may be—this special issue is dedicated. Used to their fullest extent its data will help you to run your fleet efficiently and economically. If by tooting our own horn just a bit we can help make your horns sound off with a resounding blast—then our efforts have been repaid.

— THE EDITORS

SECTION

1

NINETEEN - FIFTY
FLEET OPERATORS
REFERENCE ANNUAL



TRUCK and BUS MAINTENANCE

MAINTENANCE INSTRUCTIONS

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WEAR LIMITS

A Practical Guide to Repair and Replacement of Axles, Brakes, Clutches and Engine Parts

PISTONS, RINGS, CYLINDERS

Piston Ring Size

The correct ring size is determined by the smallest cylinder measurement, which will be found by miking below the ring travel. Consult following table to see if ring gaps must be filed to fit odd cylinder sizes.

SMALLEST CYLINDER MEASUREMENT	USE THIS RING SIZE	END CLEARANCE FITTING
Std. to .010	Std.	None
.011 to .019	.020 oversize	File fit
.020 to .024	.020 oversize	None
.025 to .029	.030 oversize	File fit
.030 to .034	.030 oversize	None
.035 to .039	.040 oversize	File fit
.040 to .049	.040 oversize	None
.050 to .059	.060 oversize	File fit
.060 to .069	.060 oversize	None
.070 to .079	.080 oversize	File fit
.080 to .089	.080 oversize	None
.090 to .099	.100 oversize	File fit
.100 to .109	.100 oversize	None

Ring Side Clearance

Aluminum Pistons	Cast Iron Pistons
.0015 to .002 top groove	.002 to .0025 top groove
.001 to .0015 lower grooves	.0015 to .002 lower grooves

Ring grooves worn to excessive side clearance should be reconditioned and groove fillers installed. Check pistons for worn grooves and if more than .005 side clearance exists, recut grooves with a Groove-Rite Tool to the next ring width and use a .030 wide groove filler.

Piston Ring End Clearance

Diameter of Cylinder	Minimum End Clearance	Maximum End Clearance
0—1 31/32	.005	.013
2—2 31/32	.007	.017
3—3 31/32	.010	.020
4—4 31/32	.013	.025
5—5 31/32	.017	.032
7—7 31/32	.023	.032
9—12	.003 per diametral inch plus .015	

Piston ring end clearance should always be measured at the smallest part of the cylinder bore, usually at the bottom of the cylinder below the ring travel. If ring end clearance is in excess of the maximum, a ring .010 in. larger in diameter should be used and the end clearance adjusted.

(Note: Wilkening recommends reboring and use of next standard oversize when ring end clearance is in excess of the maximum as given above.)

Piston Pin Clearance

Pin fits naturally depend upon the accuracy and percentage of bearing surface in the pin hole. The more accurately a pin hole is finished, the looser the pin will feel with the same clearance.

When rod bushings are finished on up to date equipment, a slight clearance for an oil film should be allowed. A properly fit pin will almost drop through the rod bushing of its own weight when tried dry, but will have a drag when oiled.

	HONED	REAMED	DIAMOND BORE
Drop Bushing	Drop Fit Dry	Light Thumb Fit	Drop Fit Dry
Pins should be fit to the bosses of different type pistons as specified in the following table:			
	OSCILLATING	FULL FLOATING	SET SCREW
Cast Iron—Bushed	Light Thumb Fit Dry	Light Drive Fit	Light Drive Fit
Cast Iron—Not Bushed	Free Drop	Heavy Palm Fit Dry	Light Drive Fit
Aluminum	Light Palm Fit Dry		

The following companies have provided information for this section: Aluminum Company of America, Hastings Mfg. Co., Koppers Co., Inc., McQuay-Norris Mfg. Co., Moog Piston Ring Co., Perfect Circle, Ramsey Corp., Sealed Power Corp., Wel-ver Piston Ring Co., Wilkening Mfg. Co.

Piston Clearance

Cam "A"—Chevrolet Six cast iron pistons must be cam ground with cam "A". Any cast iron piston in the automotive range can be cam ground with cam "A" at the option of the user. Use the following clearances when finishing either round or with cam "A":

Cyl. diam.	3	3 1/4	3 1/2	3 3/4	4
All lands	.012	.013	.014	.015	.016
Skirt	.003	.00325	.0035	.004	.0045
Cyl. diam.	4 1/4	4 1/2	4 3/4	5	
All lands	.017	.018	.019	.021	
Skirt	.00475	.00525	.00575	.00625	

Cam "B"—Ford "A" and "V8" pistons, and all pistons of the all-aluminum type having a split skirt completely open from top to bottom, use cam "B". Use the following clearances when grinding round. Skirt clearance should be cut in half when using cam "B":

Cyl. diam.	3	3 1/4	3 1/2	3 3/4	4
All lands	.020	.021	.023	.025	.027
Skirt	.00225	.0025	.00275	.00325	.0035
Cyl. diam.	4 1/4	4 1/2	4 3/4	5	
All lands	.030	.033	.036	.039	
Skirt	.00375	.004	.00425	.0045	

Cam "C"—Must be used on all T-slot or U-slot flexible skirt all-aluminum pistons, having a solid section at bottom of skirt, from 2 3/4 to 3 7/16 in. diameter.

Cam "D"—Must be used on all T-slot or U-slot flexible skirt all-aluminum pistons, having a solid section at bottom of skirt, from 3 1/2 to 4 15/16 in. diameter.

Use the following clearances with both cam "C" and "D":

Cyl. diam.	3 1/4	3 1/2	3 3/4	4
All lands	.021	.023	.025	.027
Skirt	.00175	.002	.00225	.0025
Cyl. diam.	4 1/4	4 1/2	4 3/4	5
All lands	.030	.033	.036	.039
Skirt	.00275	.003	.00325	.0035

Cam "E"—Must be used on Nelson Autothermic pistons. Same shape as cam "B" but with .013 in. drop at pin which is necessary because of the solid skirt. Also use "E" on all U-slot pistons.

Piston to Cylinder Fit

If the piston skirt diameter is such that the clearance between it and the smallest diameter of the cylinder is 1 1/2 times as much as the clearance recommended by the manufacturer, the pistons should be resized. Pistons should always be resized before piston pin holes are reamed for replacement pins.

Cylinder Wear

TYPE SET	MAXIMUM TAPER	MAXIMUM OUT OF ROUNDNESS
Plain	.003	.001
Expander (cast iron)	.006	.002
Expander (steel oil)	.012	.004

(McQuay-Norris recommends plain ring sets only in thoroughly rebuilt truck engines, cast iron expander sets for rebore. Use of cast iron or steel expander sets will be determined by the reputation of the engine for oil consumption or by type of service.)

Where the cylinder taper does not exceed .005 in., the so-called rering job will generally give satisfactory results with conventional compression and oil rings.

Where the cylinder taper is in excess of .005 in.—and if it does not exceed .010 in.—and it is impractical to recondition the engine, a rering job will generally give satisfactory results with spring type rings.

(Note: McQuay-Norris expander sets in cast iron for rebore jobs and steel for rering jobs can be used in up to .012 cylinder taper.)

Any cylinder that is worn or tapered .015 in. or more should be rebored even though the rings are designed to operate in much greater tapers. Maximum out-of-roundness permissible is .005 in. If the cylinder has holes or pockets or waves which are more than .001 in. deep, or a ridge at the bottom of the ring travel area, the cylinder should be rebored.

Cylinder Finish

Recommended cylinder finish in all rebore, rering and resleeve installations is 10-25 microinches RMS. with a cross hatch pattern of scratches. In rebore and resleeve installations the use of a 200-250 grit hone stone is recommended. Hone must be allowed to cut-self free with no pressure upon removal. In a rering installation the recommended finish can be obtained by using a Deglazer with 3/0 emery cloth. Clean cylinders with brush, hot water and soap.

(Note: McQuay-Norris recommends use of a 280 grit hone to deglaze and also to following boring bar.)

Main and Connecting Rods

The following companies have provided information for this section: Federal Mogul, Monmouth Products division of Cleveland Graphite Bronze Co.

Bearing Tolerances

CRANKSHAFT—A shaft worn to the extent that the bearing surfaces are ridged and scored, is unfit for use and must be reground.

JOURNALS: Should not be more than .003 in. (a) out-of-round.

CRANKPINS: Should not be more than .002 in. out-of-round. If main journals or crankpins exceed these tolerances, the shaft is unfit for further use and must be reground.

CRANKCASE—Bearing Saddle Bores: Must be round within .002 in. (b) and in true alignment lengthwise for use with precision insert main bearings. Maximum out-of-round journals should not be used with maximum out-of-round case bores.

MAIN BEARINGS—Spread (width across the open ends) should exceed the crankcase bore diameter by .005 in. to .020 in., depending on the thickness and structural stiffness of the bearing.

(TURN TO PAGE 214, PLEASE)

CAPACITIES

MAINTENANCE DATA

AUTOCAR

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
C45, C45T, U45, U45T (1948-50)	10	14	25	27	
C50, C50T, U50, U50T (1945-50)	10	14	20	27	
C50D (1946-50)	10	14	20	27	
C5064 (1946-50)	10	14	12ea	27	
C70, C70T (1945-50)	12	18	20	34	
U70, U70T (1945-50)	12	18	20	38	
C70S, C70TS (1945-50)	12	18	18	33	
U70S, U70TS (1945-50)	12	18	18	38	
C70D (1946-50)	12	18	18	34	
C7064 (1946-50)	12	18	18	33	
C75T (1948-50)	14	18	18	42	
C8044 (1948-50)	12	18	18	33	
C90 (1945-50)	12	18	18	33	
C90T (1945-50)	12	18	18	38	
U90, U90T (1945-50)	12	18	18	38	
C90D (1946-50)	12	18	18	33	
C9064 (1946-50)	12	18	20ea	33	
C95T (1948-50)	14	24	18	42	
DC75T (1949-50)	20	14	18	37	
DC100, DC100T, DC100D (1945-50)	20	18*	18	40	
DC100N, DC100TN, DC100DN (1946-50)	28	18*	18	40	
DC10044N (1948-50)	28	16	18	40	
DC10064 (1945-50)	20	18*	17ea	40	
DC10064N (1946-50)	28	16*	17ea	40	
DC10064S (1945-50)	20	18*	26ea	40	
DC10064SN (1946-50)	28	18*	26ea	40	

*—Auxiliary Transmission 12 pints.



45, 50, 70, 70S, 75, 8044, 90, 95, DC75, DC100 Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Gasoline Models (1945-50)	120*	17	Pos
All Diesel Models (1945-50)	155**	23	Pos

*—2 Batteries; **—4 Batteries.

TENSIONS

ENGINE MODELS	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
377	85-90	135-145	85-90
447, 501	85-90	135-145	95-100
All Models with Diesels			

See CUMMINS—page 92.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tapet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Flywheel Teeth °C B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
45 Series (1948-50), 50 Series (1945-50)	Own 377	6-4x5	40-2450	11°B	4B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	25	100
70 Series (1945-46)	Own 447	6-4½x5½	40-2400	11°B	4B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	25	95
70 Series (Note A), (1946-50)	Own 447	6-4½x5½	40-2400	16°B	6B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	25	105
70S Series (1945-46)	Own 501	6-4½x5½	40-2400	11°B	4B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	25	95
70S Series (Note B), (1946-50)	Own 501	6-4½x5½	40-2400	16°B	6B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	25	105
75 Series (1948-50)	Con R6572	6-4½x5½	60-1800	17°B	4B	.....	.020	.020	CH	5 COM	18mm	.025	C	5°B	.....	120
90 Series (1945-46)	Own 501	6-4½x5½	40-2400	11°B	4B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	25	95
8044 Series, 90 Series (Note B), (1946-50)	Own 501	6-4½x5½	40-2400	16°B	6B	.....	.018	.021	CH	8 COM	18mm	.025	C	6°B	25	105
95 Series (1948-50)	Con R6602	6-4½x5½	60-1800	17°B	4B	.....	.020	.020	CH	5 COM	18mm	.025	C	5°B	.....	120
DC75 Series (1949-50)	Cum HB600	6-4½x6	40-1800	5°B	.....	.....	.014	.022	.....	.....	.....	.....	Diesel	.....	.....	525
DC100 Series (1945-50)	Cum HB600	6-4½x6	40-1800	5°B	.....	.....	.014	.022	.....	.....	.....	.....	Diesel	.....	.....	525
DC100N Series (1946-50)	Cum NHB600	6-5½x6	40-2100	.....	.....	.....	.017	.027	.....	.....	.....	.....	Diesel	.....	.....	500

Note A—Beginning with Engine No. 45-4541.

Note B—Beginning with Engine No. 60-5561.

C—.018-.024.

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
377 (1945-50)	110	2½	76	2½
447, 501 (1945-46)	110	2½	76	2½
*447, *501 (1946-50)	132	2½	69	2½
Con R6572, R6602 (1948-50)	170	1¾	73	2½
Cum HB600 (1945-50)	136	3½	87	3½
Cum NHB600 (1945-50)	102	3½	72	3½

*—Beginning with 447 Engine No. 45-4541 and 501 Engine No. 60-5561.

†—Free length.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
C45 (1948-50); C50, C70, C70S, C90 (1945-50)	0-¼	1	N1-1P	8
C45T, C75T, C95T (1948-50)	0-¼	1	N¾-2¼P	8
C50D, C5064, C70D, C70DS, C90D (1946-50)	0-¼	1	N1-1P	8
C7064, C9064 (1946-50)	0-¼	1	N1-1P	8
C50T, C70T, C70TS, C90T (1945-49)	0-¼	1	0-2P	8
C50T, C70T, C70TS, C90T (1950)	0-¼	1	N¾-2¼P	8
U45, U45T (1948-50); U50, U50T, U70, U70T, U70S, U70TS, U90 (1945-50)	0-¼	1	N1½-1½P	8
C8044, DC10044N (1948-50)	0-½	0	5P	0
DC75T (1949-50); DC100, DC100T (1945-50)	0-¼	1	0-2P	8
DC100D, DC10064S (1945-50)	0-¼	1	N1-1P	8
DC10064 (1945-50); DC100TN, DC10064N, DC10064SN (1946-49)	0-¼	1	0-2P	8
DC10064SN (1950)	0-¼	1	N1-1P	8

N—Negative.

P—Positive.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models (1945-50)	(S)30	(M)20	(W)10	140	90	140	90	140	90	140-90
S—Summer.	M—Mild.	W—Winter.								

BROCKWAY



Models 88WH, 128W, 146W, 148W, 151W, 152W, 153W, 154W, 154WH, 240XW, 260XL, 260XW, 260XWL

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
88WH (1945-50)	7	7	15	25	25
128W (1947-50)	7	12	20	25	25
146W (1947-50)	7a	12	31	25	25
148W (1948-50)	8a	16	31	30	30
151W (1948-5)	8a	16	34	32	32
152W (1947-5)	8a	16	31c	32	32
153W (1948-50)	8a	16	36	32	32
154W (1947-50)	8a	16	31c	30	30
154WH (1947-50)	14b	18	30c	40	40
240XW (1947-50)	14b	18	30c	40	40
260XW, 260XL, 260XWL (1947-50)	14b	18	34d	40	40

a—When oil filter is drained add 1 extra qt.
b—When oil filter is drained add 4 extra qts.
c—With 2-speed axle—18 pt.
d—With 2-speed axle—32 pt.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
88WH, 128W, 146W, 148W, 151W, 152W, 153W, 154W	120	17	Pos
154WH, 240XW, 260XL	155	23	Pos
260XW, 260XWL	120*	17	Pos

*—2 Batteries.

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
All Models	See Continental—Page 92		

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tapet Clearance for Valve Timing Cold	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Flywheel Teeth °C B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
88WH (1945-50)	Con 38B	6-3 1/4 x 4 1/4	40-2000	8 1/2" B	2 1/4" B	.022	.017C	.022C	CH	7 COM	18mm	.025	.020	6°B	.....	.....
128W, 146W (1947-50)	Con 40B	6-4 x 4 1/4	40-2000	8 1/2" B	2 1/4" B	.022	.017C	.022C	CH	7 COM	18mm	.025	.020	6°B	.....	.....
148W, 151W, 152W, 153W, 154W (1944-50)	Con 42BX	6-4 1/2 x 4 1/4	55-2500	16" B	6B	.022	.017C	.022C	CH	7 COM	18mm	.025	.020	6°B	.....	.....
154WH, 240XW, 260XL (1947-50)	Con 46B	6-4 1/2 x 5 1/4	55-2500	17" B	6 1/2" B	.024	.022C	.022C	CH	5 COM	18mm	.025	.020	5°B	.....	.....
260XW, 260XWL (1947-50)	Con 48B	6-4 1/2 x 5 1/4	55-2500	17" B	6 1/2" B	.024	.022C	.022C	CH	5 COM	18mm	.025	.020	5°B	.....	.....

C—Cold.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
88WH, 128W, 146W (1944-50)	110-118	1.52	53-59	1 1/4
148W, 151W, 152W, 153W, 154W (1944-50)	O, 110-118 I, 28-32	1.52	53-59	1 1/4
154WH, 240XW, 260XW, 260XL, 260XWL (1944-50)	O, 160-170 I, 82-88	1 1/4	11.3-14.3 67-73 33-37	1 1/4 2 1/4 2 1/4

O—Outer. I—Inner.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
88WH, 128W, 260XL, 260XWL	1/8-3/8	1	1-2	8
146W, 148W, 154W, 154WH	1/8-3/8	1	1-2	5 1/2
151W, 152W, 153W, 240XW, 260XW	1/8-3/8	1	1-2	0

LUBRICATION

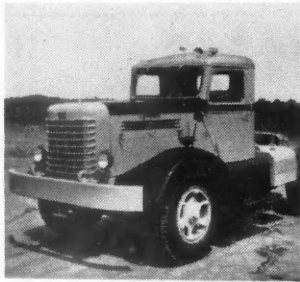
MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
88WH, 128W, 146W, 148W, 151W, 152W, 153W, 154W (1944-50)	40 above 32°	30 below 32°	.....	90EP	90EP	90EP	90EP	160	110	140
154WH, 240XW, 260XW, 260XL, 260XWL (1944-50)	30 above 32°	30 below 32°	.....	90EP	90EP	90EP	90EP	160	110	140

EP—Extreme pressure lube.

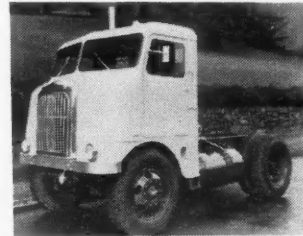
BROWN

MAINTENANCE DATA

FREIGHTLINER



Models
A-64, B-42



Models Gas and Diesel

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
BROWN					
22RT	12*	24	20	46	
R6513T, R6572TC-TJ	16*	24	20	46	
140GKT	16*	24	20	46	
HRB600TH-TJ	20*	24	20	46	
HRB600TJ, HRB600T	30*	24	20	46	
NHB600TJ	30*	29	20	52	
FREIGHTLINER					
A-64, B-42	28	17†	20	58	

*—Change.

†—17 Main and 17 Aux.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
BROWN			
22RT, R6513T, R6572TC-TJ	100a*	13	Pos
140GKT, R6572TJ	140a*	13	Pos
HRB600TH	100a*	13	Pos
All other Diesels	140a**		Pos
FREIGHTLINER			
A-64, B-42	200a	25	

*—One 12 volt battery.

**—Two 12 volt batteries.

†—Alternate battery.

a—Discharge at 20 hours.

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
BROWN			
22RT, R6513T, R6572T	90-100	120-130	65-75
All Diesel models	430-450	310-330	105-115
FREIGHTLINER			
All Diesels	430-450	325	125-135

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
BROWN															
22RT	Con 22R	6-4 1/2 x 5 1/4	30-1800	4° A		.014	.016	.016	AL	BT4	18mm	.024	.036	2° B	110
R6513T	Con 6513	6-4 1/2 x 5 1/4	60-1800	15° A		.020	.020	.020	CH	6COM	18mm	.030	.030	3° B	110
R6572T	Con 6572	6-4 1/2 x 5 1/4	60-1800	15° A		.020	.020	.020	AL	BT8	18mm	.030	.030	3° B	110
140GKT	Wau 140GK	6-4 1/2 x 5 1/4							AL						
HRB600T	Cum HRB600	6-5 1/2 x 6	40-1800	5° B		.014	.022			Diesel					
HRB600T	Cum HRB600	6-5 1/2 x 6	40-2000							Diesel					
HRB600T	Cum HRB600	6-5 1/2 x 6	40-1800							Diesel					
NHB600T	Cum NHB600	6-5 1/2 x 6	40-2100			.017	.027			Diesel					
FREIGHTLINER															
A-64	Cum NHB	6-5 1/2 x 6	35-50*	20° B		.014	.027			Diesel					625
B-42	Cum HRB	6-5 1/2 x 6	35-50*	5° B		.014	.022			Diesel					586

*—At operating speed.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
BROWN				
All 22R			57	2 3/4
Con 6513, 6572	170	1 1/4	73	2 1/4
Cum HRB600, HRB600, HRB600	136	3 1/2*	87	3 1/4*
Cum NHB600	102	3 1/2	72	3 1/2*
FREIGHTLINER				
Cum NHB	109	1 1/4	78	2 1/4
HRB	136	2 1/8	87	2 1/8

*—Free length.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
BROWN				
All Models through TH	1/8 ± 1/8	3/4 ± 1/4	4°-5°P	8
All TJ Models (1949)	1/8 ± 1/8	3/4 ± 1/4	2°-3°P	8 1/2
FREIGHTLINER				
All Models	1/4	1	2 1/4	8

P—Positive

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
BROWN									
22RT, R6513T	(S)—40	(W)—30	140	90	140	90	140	90	#0
R6572T	(S)—40	(W)—30	50*	50*	140	90	140	90	#0
All Diesel Models	(S)—20	(W)—20	50*	50*	140	90	140	90	#0
FREIGHTLINER									
A-64, B-42	(S)—30	(W)—30	90	90	90	90	90	90	90

S—Summer.

W—Winter.

*—Spicer transmissions. With Fuller transmissions: Summer—140; Winter—90.

CHEVROLET



HP, HR, HT, HS, HU, TJ, TK, TL, TP, TPS,
TR, TRS, TS, TSS, TV, TVS, TW, TWS, TX

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
HP (1/2-Ton).....	5	1 1/4*	4 1/2		15
HR, HT (3/4-Ton).....	5	1 1/4*	6		15
HS, HU (1-Ton).....	5	6	6		15
TJ, TK, TL (1 1/4-Ton).....	5	6	11		15**
TV, TVS, TW, TWS, TX, TP, TPS, TR, TRS, TS, TSS.....	5	6	12***		17 1/2

*—With optional 4-speed transmission, 6 pt.

**—With optional 3-in. core, 17 1/2 qt.

***—With optional 2-speed rear axles, 14 1/2 pt.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
TL, TX (School Bus).....	125	19	Neg
All Trucks.....	100	15	Neg

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
All Models.....	70-80	100-110*	40-50*

*—With oiled threads.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After			OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Intake	Exhaust	Make	Type	Size	Gap				
All Models with 216.5 cu. in. Engine.....	Own	6-3 1/2"x3 3/4"	14-2000	1°A	1 1/2°B	EXH)	.008*	.015*	AC	44-5 Com	14mm	.035	.018	5°B	.....	110
All Models with 23.5 cu. in. Engine.....	Own	6-3 1/2"x3 1/2"	14-2000	1°A	1 1/2°B	(Zero)	.008*	.015*	AC	44-5 Com	14mm	.035	.018	5°B	.....	110

*—Above 8000 lb GVW, except school buses, .010 intake, .020 exhaust.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
All Models.....	124-140	1.505	53-63	1.821

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
HP (1/2-Ton).....	1/8-1/4	1/2-1 1/2	1 1/4-2 1/4	7 1/2*
HR (3/4-Ton).....	1/8-1/4	1/2-1 1/2	2-3	7 1/2*
HT (3/4-Ton Forward Control).....	1/8-1/4	1/2-1 1/2	2 1/2-3 1/2	7 1/2*
HU (1-Ton Forward Control).....	1/8-1/4	1/2-1 1/2	1 1/2-2 1/2	7 1/2*
HS, TJ, TK, TL, TV, TVS, TW, TWS, TX.....	1/8-1/4	1/2-1 1/2	2 1/4-3 1/4	7 1/2*
TP, TPS, TR, TRS, TS, TSS.....	1/8-1/4	1/2-1 1/2	2 1/4-3 1/2	7 1/2*

*±1 deg.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models.....	20 above 32*	20W@10° to 32°	10W@-10° to 10°*	90	90	90MP	90MP	MP	MP	90

*—10% kerosene below—10°.

MP—"Multi-Purpose" Gear Lubricant.

CAPACITIES

MODEL	LUBRICANT CAPACITY			Cooling System Capacity, Quarts
	* Engine Quarts	Transmission Pints	Rear Axle Pints	
G101	8	12	20	28
G301	8	16	23	30
G302	8	16	31	35
G402	9	16	31	35
G601	18	24	†	47
G602	18	24	†	49
G603	18	24	†	53½
D202	9	12	20	26
D401	15	16	23	35
D402	15	16	31	35
D601	13	15	†	40
D801	20	29	†	42
D802, D803, D808	28	29	†	42

*—Without filter.

†—38 for Model S200, 30 for Model R100.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
G101, G302, G402	100*	13	Pos
G301	135	19	Pos
G601, G602, G603	135*	19	Pos
D202, D401, D402, D601, D801, D802, D803, D808	200**	25	Pos

*—2 Batteries.

**—4 Batteries.

TENSIONS

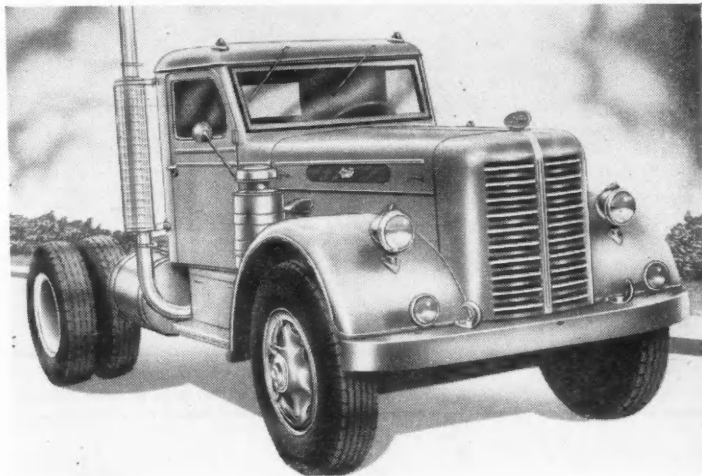
MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
G101, G301, G302, G402, G601, G602, G603	5/8" (18) 20-25 5/8" (16) 35-40 5/8" (20) 70-75	3/4" (20) 85-95 5/8" (18) 120-130 5/8" (18) 135-145	
D202	158	77*-95**	140
D401, D402	158	175	158
D601	5/8"-175 1"-280	175	158
D801, D802, D803, D808	430-450	310-330	105-115

*—Center and Rear.

**—Front and Intermed.

MAINTENANCE DATA

CORBITT



Models G101, G301, G302, G402, G601, G602, G603, D202, D401, D402, D601, D801, D802, D803, D808

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
G101	Con M6330	6-4x4½	40-50-50	6½°B	.....	.022a	.022a	AC	84	18mm	.025	.020	6°B	.....	108
G301	Con B6371	6-4½x4½	40-50-50	6½°B	.....	.022	.017	AC	85	18mm	.025	.020	6°B	.....	123
G302	Con B6427	6-4½x4½	40-50-50	6½°B	.....	.022	.017	AC	84	18mm	.025	.020	7°B	.....	124
G402	Con T6427	6-4½x4½	40-50-50	16°B	.....	.022	.017	CH	C6	18mm	.025	.020	7°B	.....	115
G601	Con R6513	6-4½x5½	50-60-60	17°B	.....	.0245	.020	AC	85	18mm	.025	.020	5°B	.....	120
G602	Con R6522	6-4½x5½	50-60-60	17°B	.....	.0245	.020	AC	85	18mm	.025	.020	5°B	.....	120
G603	Con R6602	6-4½x5½	50-60-60	17°B	.....	.0245	.020	AC	85	18mm	.025	.020	5°B	.....	120
D202	Her DJXH	6-3½x4½	45-2000	12°B	.....	.010	.010	.....	.....	.....	.....	.....	.....	.....	.....
D401	Her DWXD	6-4½x4½	50-2600	17½°B	.....	.010	.010	.....	.....	.....	.....	.....	.....	.....	.....
D402	Her DWXLD	6-4½x5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D601	Her DRXC	6-4½x5½	30-1200	12°B	.....	.016	.016	.....	.....	.....	.....	.....	.....	.....	.....
D801	Cum H8600	6-4½x6	30-40-1800	5°B	.....	.014	.014	.....	.....	.....	.....	.....	.....	.....	475
D802	Cum H8600	6-5½x6	30-40-1800	5°B	.....	.014	.014	.....	.....	.....	.....	.....	.....	.....	525
D803	Cum H8600	6-5½x6	30-40-2000	20°B	.....	.009	.009	.....	.....	.....	.....	.....	.....	.....	525
D808	Cum H8600	6-5½x6	30-40-2000	5°B	.....	.014	.014	.....	.....	.....	.....	.....	.....	.....	525

a—With Roto valves, set @ .015.

b—With Stelite valves, increase .003.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
G101	111-118	1.521	53-59	1½
G301, G302	102-110	1.521	53-59	1½
G402	28-32	1½	11.3-14.3	1½
G601	129	1.458	71	1½
G602	57	1½	12.8	1½
G603	160-170	1.75	67-73	2.25
D202	82-88	1.75	33-37	2.25
D401, D402	55	1.406	31	1.781
D601	37	1.281	19	1.658
D801	73	1½	34	1½
D802	64	1½	25	1½
D803	48	1.449	27	1.844
D808	30	1.355	17	1.75
D801	129-143	2½	83-91	3½†
D802, D808	129-143	2½	83-91	2½†
D803	102	1½	72	3½†

†—Free length.

I—Inner.

O—Outer.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Diesels (1947-50)	40 above 90°	30 above 32°	20 below 32°	140	90	140	90	140	140	140
All Gasoline Models (1947-50)	50 above 90°	40 above 32°	30 below 32°	140	90	140	90	140	140	140

FRONT END

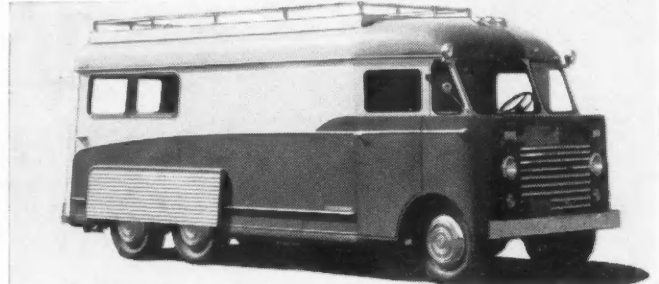
MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All 2-Wheel Drive (1947-50)	¾-¾	1	2-3½	8
All Front Wheel Drive (1947-50)	.....	0	8-7	0

DART

LINN



**Models: 100, 110, 140, 200 Series,
250 Series**



**Models: A-15, A-25, A-35, A-45,
L-2, L-4, L-6, L-8**

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
DART—100, 110, 200/3010, 200/456	120	17	Pos
140, 250/462, 250/472	168**	17	Pos
LINN—All Models	135	19	Pos

**—12 Volt Battery.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds-feet)
DART			
100, 200/3010, 200/456	129-134	129-134	120-125
110	160-170	155-185	
140, 250/472	300	260	263
250/462	175	241-250	72-75
LINN			
L-2, L-4	52½	Note 1	38½
L-6, L-8, A-15, A-25, A-35, A-45	75	Note 1	52½

Note 1—Front and Inter.—70; Center and Rear—59½

CAPACITIES

MODEL	Engine Quarts	Trans-mission Pinta	Rear Axle Pinta	Cooling System Capacity, Quarts
DART—100	10	24	38	42
110	15	24	39	65
140	28	44	100	59
200/3010	10	16	28	42
200/456	10	32	64	42
250/462	18	29	52	46
250/472	28	29	56	59
LINN—L-2, L-4, L-6, L-8	6	2½	6*	18
A-15, A-25, A-35, A-45	6	2½	6*	22

*—Front axle only.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG	Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Exhaust	Make Type Size Gap			
DART—100, 200/3010, 200/456	Wau 140GK	6-4½x5½	40	5°A	.010	.012-4C .018-20C	CH 8 COM 18mm Z	.018		
110	Det 6094	6-4½x5	30		.012	.012 .012	Di esel Z			
140, 250/472	Her DFXH	6-5½x6	38		.010	.010 .016	CH 8 COM 18mm Z	.020		
250/462	Wau 145GK	6-5½x6	40	5°A	.010	.012-4C .023-25C	CH 8 COM 18mm Z	.018	4°B	
LINN—L-2, L-4	Her QXC3	6-3½x4½	26-1600	5°B	.006	.008 .010	AL A5 14mm .025	.018	4°B	
L-6, L-8, A-15, A-25	Her JXC3	6-3½x4½	26-1600	5°B	.006	.008 .010	AL A5 14mm .025	.018	4°B	
A-35, A-45	Her JXC	6-3½x4½	26-1600	5°B	.006	.008 .010	AL A5 14mm .025	.018	4°B	

Det—Detroit Diesel (GM).

Z—.025-.030.

C—Cold

VALVE SPRINGS

MODEL	Valve Open Pressure (Ave.) Pounds	Valve Open Length Inches	Valve Closed Pressure (Ave.) Pounds	Valve Closed Length Inches
DART—All Models—See Listing under Engine Manufacturers, pages 92-95				
LINN—L-2, L-4	37	1.281	19	1.856
L-6, L-8, A-15, A-25, A-35, A-45	58	1.594	43	1.920

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
DART—All Models	1/8-3/16	1	1	8
LINN—All Models	3/8-1/2	3/4	2	2

LUBRICATION

MODEL	ENGINE Viscosity and Temperature Range	TRANSMISSION Summer Winter	REAR AXLE Summer Winter	STEERING GEAR Summer Winter	UNI-VERSAL JOINT
DART—All Models	(S & W) 30 40 above 90°	(Extreme Cold) 20 30@32°-90°	90 140	90 140	90 140
LINN—All Models	(S & W) 30 40 above 90°	(Extreme Cold) 20 30@32°-90°	90 140	90 140	90 140

* 10, 10W Below 10°.

S—Summer.

W—Winter.

B—Chassis lube.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
201	6	4 1/2	6	16	
222	6	4 1/2	6	19	
306	6	4 1/2	8d	17	
322	6	4 1/2	8d	19	
404	9	4 1/2	11d	23	
404SC	9	4 1/2	8d	26	
420	9	4 1/2	11d	24	
509	9	4 1/2	13	23	
509C	9	4 1/2	11d	26	
509SC	9	4 1/2	13d	24	
520	9	4 1/2	14d	24	
614	9	12	23d	22	
614C	9	12	20	23	
614SC	9	12	23d	22	
620	9	12	22d	24	
650T	10	18	22d	35	
702A	8	20b	20d	43	
703	10	20b	20d	42	
704	10	18	30d	42	
806A	8	18b	22d	43	
806C	10	20	16	28	
809	10	18b	22d	43	
901	18	15c	30d	54	
910	20	44ca	30d	53	
910N	50	44ca	30d	44	
910R	50	44	30d	50	

a—Capacities shown are for standard transmissions. The following, furnished on certain models, are optional.

WARNER	FULLER
T9-T9A—4 1/2 pt.	5A-65—24 pt.
T87—4 1/2 pt.	10B-1120—44 pt.
T98—6 pt.	
CLARK	SPICER
205V-VO—12 pt.	6252-6253—15 pt.
270V-VO—20 pt.	7751-7851—26 pt.
276V—20 pt.	8255—24 pt.
290V-VO—18 pt.	b—Aux. trans.—8 pt.
291V—18 pt.	c—Aux. trans.—12 pt.
326V-VO—24 pt.	

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
201, 222, 306, 322	Her QXLD	6-3 1/2x4 1/4	25-40-3200	5°B	.....	.008	.010	CH	J-6	14mm	.027	.020	6°B	.....	.....
404SC	Her JXE-3	6-3 1/2x4 1/4	25-40	5°B	.....	.010	.010	CH	J-6	14mm	.027	.020	6°B	.....	.....
404, 420, 509	Her JXB	6-3 1/2x4 1/4	25-40-3000	5°B	.....	.010	.008	CH	J-6	14mm	.027	.020	6°B	.....	.....
420, 509, 509C, 509SC, 520	Her JXC	6-3 1/2x4 1/4	25-40-3000	5°B	.....	.010	.008	CH	J-6	14mm	.027	.020	6°B	.....	.....
420, 509, 614, 614C, 614SC, 520, 620	Her JXD	6-4x4 1/4	25-40-3000	5°B	.....	.010	.008	CH	J-6	14mm	.027	.020	6°B	.....	.....
614, 614SC, 520, 620	Her JXLD	6-4x4 1/4	25-40-3000	5°B	.....	.010	.010	CH	J-6	14mm	.027	.020	6°B	.....	.....
702A, 806A	Her WXL	6-4 1/2x4 1/4	25-40	5°B	.....	.010	.012	CH	J-6	14mm	.027	.020	6°B	.....	.....
650, 650T, 703, 809	Con T6427	6-4 1/2x4 1/4	35-43-2600	16°B	.....	.022	.017	CH	8 COM	18mm	.025	.020	10°B	.....	.....
704	Her TDXB	6-4 1/2x5 1/4	25-30	5°B	.....	.010	.010	AL	AT-8	14mm	.027	.020	2°B	.....	.....
806C	Her WXL-3	6-4 1/2x5 1/4	25-40	5°B	.....	.010	.012	CH	J-6	14mm	.027	.020	4°B	.....	.....
901	Con R6572	6-4 1/2x5 1/4	50-55	17°B	.....	.024	.020	CH	5 COM	18mm	.025	.020	5°B	.....	.....
910	Cum HB-600	6-5 1/2x6	55-2100	.....	.....	.014	.022	.....	.....	.....	.....	Di esel	.....	.....	.....
910N	Cum NHB-600	6-5 1/2x6	55-1800	.....	.....	.....	.....	.....	.....	.....	.....	Di esel	.....	.....	.....
910R	Cum HRB-600	6-5 1/2x6	55-1800	.....	.....	.....	.....	.....	.....	.....	.....	Di esel	.....	.....	.....

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Her QXD-3, QXLD	48 lb. for 1 in. defl.	.....	2 1/2-2 3/4	2 1/2
Her JXE-3, JXB, JXC, JXD	60-65 at 1.594 length	.....	.....	.....
Her JXLD	112 at 1.628 length*	.....	.....	.....
Her WXL, WXL	97-107 at 2 1/4 length	.....	.....	.....
.....	47 1/2-82 1/2 at 2 1/4 length	.....	3 1/2	3 1/2
Her TDXB	97-107 at 2 1/4	.....	3 1/2	3 1/2
Con T6427	53-59 at 1 1/2 length	.....	2 1/2	2 1/2
.....	11 1/2-14 1/2 at 1 1/2 length	.....	1 1/2	1 1/2
Con R6572	67-73 at 2 1/4 length	.....	2 1/2	2 1/2
.....	32-38 at 2 1/4 length	.....	2 1/2	2 1/2
Cum HB600, HR600	129-143	2	83-91	2 1/2

*—Free Length. I—Inner. O—Outer.
 *—Data shown with 4 active coils; with 5 active coils; 58.6 lb. at 1.984 in. length.

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
201, 306, 404, 404SC, 509, 509SC, 614, 614C, 702A, 703, 806A, 806C, 809	40	30	140C	90C	A	B	140EP	140EP	140
901	40	30	50	50	A	B	140EP	140EP	140
222, 322, 420, 520, 620, 614SC, 650T	40	30	140GO	90GO	A	B	140EP	140EP	140
704, 910, 910N, 910R	40	30	140C	90C	A	B	140EP	140EP	140

Note—Heavy-duty detergent (HD) engine oil recommended for heavily worked and highway trucks; premium-type engine oil for city trucks and intermittent operation.

A—Clark spiral bevel axles, 140EP; hypoid 90HYP. Eaton 2-speed, 90EP, 140EP above 100°; hypoid 90MPGL. Timken spiral bevel axles 140GO; hypoid 140MPGL; worm drive 140GO.

FRONT END

MODEL	TOE-IN (Inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
201, 306	1/4	1	3 1/4	9
222, 322	1/4	1	3 1/4	9
404, 404SC, 509, 509SC, 420, 520	1/4	1	1 1/4	8 1/4
509C, 614, 614C, 614SC, 620	1/4	1	1 1/4	8
702A, 703, 704, 806A, 809	1/4	1	2 1/4	8
806C, 901	1/4	1	1 1/4	8 1/4
650T	1/4	1	2 1/4	8
910, 910N, 910R	1/4	1	3	8

B—Clark spiral bevel axles 90EP; hypoid 90HYP. Eaton 2-speed 90EP; hypoid 90MPGL. Timken spiral bevel 140GO; hypoid 140MPGL; worm drive 140GO.

C—With Spicer transmission 50MO summer and winter.

MPGL—Multi-purpose gear lubricant. GO—Straight mineral gear oil. MO—Motor oil. EP—Extreme pressure lube. HYP—Heavy-duty hypoid tube.

MAINTENANCE DATA

DIAMOND T

d—Capacities shown are for standard axles. The following optional axles are furnished on certain models.

CLARK	18601—22 pt.	U-200P—38 pt.
R-950—9 pt.	20500—22 pt.	U-300—39 pt.
R-1000—11 pt.	22501—32 pt.	S-200P—38 pt.
R-1250—14 pt.		SW-3012—17 pt.
EATON	TIMKEN	
L-100—23 pt.	L-100—23 pt.	SD-3010—14 pt.
L-200—31 pt.	L-200—31 pt.	SW-3010—14 pt.
L-300—29 pt.	L-300—29 pt.	SD-462W—20 pt.
Q-200—34 pt.	Q-200—34 pt.	SW-462W—20 pt.
Q-300—32 pt.	Q-300—32 pt.	SBD1055—19 pt.
R-100—30 pt.	R-100—30 pt.	SBD1555—22 pt.
R-200—36 pt.	R-200—36 pt.	SFD460—26 pt.
R-300—34 pt.	R-300—34 pt.	



All Current Models

If optional engine used, see page 92 to 95.

DODGE



Series B-2-B, B-2-C, B-2-D, B-2-PW, B-2-F, B-2-G, B-2-H, B-2-J, B-2-K, B-2-R, B-2-T, B-2-V, B-2-Y, B-1-DU, B-1-EU

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
B-2-B, B-2-C	5	3 1/2	3 3/4	17 1/2	17 1/2
B-2-D	5	3 1/2	5 1/2	17 1/2	17 1/2
B-2-PW	5	6	6	17	17
B-1-DU	5	3 1/2	4 1/4	17	17
B-1-EU	5	6	4 1/4	17	17
B-2-F	5	6	11	19 1/4	19 1/4
B-2-G, B-2-GM, B-2-H, B-2-HM, B-2-HH, B-2-HHM	5	9	11	19 1/4	19 1/4
B-2-J, B-2-JM	5	11	10	21 1/4	21 1/4
B-2-K, B-2-KM	5	11	20	21	21
B-2-R	8	11	20	30 1/4	30 1/4
B-2-T	8	11	23	30 1/4	30 1/4
B-2-V	8	11	31	30 1/4	30 1/4
B-2-Y	8	16	31	34	34

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
B-2-B, B-2-C, B-2-PW	100	15	Pos
B-2-D, B-1-DU, B-1-EU	105	15	Pos
B-2-F, B-2-G, B-2-GM, B-2-H, B-2-HH, B-2-HM, B-2-HHM	114	17	Pos
B-2-J, B-2-JM, B-2-K, B-2-KM	120	17	Pos
B-2-R	136	17	Pos
B-2-T, B-2-V, B-2-Y	153	17	Pos

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models except as listed below	Nuts 52-57 Cap Screws 65-70	80-85	45-50
B-2-R, B-2-T, B-2-V, B-2-Y	55-60 Hot	85-90	50-75

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. of R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
B-2-B, B-2-C	Own 218	6 3 1/4 x 4 3/8	40-800	12°B	5B	.....	.010	.014	AL	A5R	14mm	.035	.020	TC	TC	120
B-2-D, B-2-PW, B-1-DU, B-1-EU	Own 230	6 3 1/4 x 4 3/8	40-800	8°B	.....	.....	.010	.014	AL	A5R	14mm	.035	.020	2°A	3/4A	125
B-2-F, B-2-G, B-2-GM, B-2-H, B-2-HH, B-2-HM, B-2-HHM	Own 237	6 3 1/4 x 4 1/4	40-800	12°B	5B	.....	.010	.014	AL	A5R	14mm	.035	.020	TC	TC	130
B-2-J, B-2-JM, B-2-K, B-2-KM	Own 251	6 3 1/4 x 4 1/4	40-800	12°B	5B	.....	.010	.018	AL	A5R	14mm	.035	.020	2°A	3/4A	130
B-2-R	Own 306	6 3 3/4 x 4 5/8	50-1000	21°B	9B	.....	.010	.018	AL	A5R	14mm	.035	.020	1°A	.....	110
B-2-T, B-2-V	Own 331	6 3 3/4 x 5	50-1000	21°B	9B	.....	.010	.018	AL	A5R	14mm	.035	.020	TC	TC	120
B-2-Y	Own 377	6 4 x 5	50-1000	20°B	.....	.....	.010	.018	AL	A5R	14mm	.035	.020	2°A	3/4A	133

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models (except as listed below)	30 above 32°	20W@ 10° to 32°	10W below 10°*	90	90A	90	90A	90	90	C
B-2-K	30 above 32°	20W@ 10° to 32°	10W below 10°*	90	90A	140	90	90	90	C
B-2-R, B-2-T, B-2-V, B-2-Y	30 above 32°	20W@ 10° to 32°	10W below 10°†	90	90A	140	90	90	90	C

*—Use 5W below —10°.

†—Use 10% kerosene below —10°.

A—SAE 80 below —10°.

C—Universal joint grease.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
All Models except as listed below	111	1 3/4	42 1/2	1 3/4
B-2-R, B-2-T, B-2-V	108	1 5/8	42 1/2	2
B-2-Y	125	1 1/2	70	2

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
B-2-PW	0-1/8	1 1/2	1 1/2 Load, No Load	8
B-2-B	1/8	1 1/2	3/4 Load, No Load	4
B-2-C, B-2-D	1/8	1 1/2	1 1/2 Load, No Load	4
B-1-DU	1/8	1 1/2	1 1/2 Load, No Load	4
B-2-F, B-2-G, B-2-GM, B-2-H, B-2-HH, B-2-HM, B-2-HHM, B-2-J, B-2-JM, B-2-K, B-2-KM	1/8-1/8	2	3 Load, 2 No Load	7
B-1-EU	1/8-1/8	2	2 1/2 Load, 1 1/2 No Load	7
B-2-R	1/8-1/8	2	3 1/2 Load, 2 1/2 No Load	7
B-2-T	1/8-1/8	1	2 1/2 Load, 1 1/2 No Load	8
B-2-V, B-2-Y	1/8-1/8	1	3 1/2 Load	5 1/2

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
TH.....	6	11	B	27	
TH339.....	10	11	C	27	
RH.....	7	16	D	32½	
JH.....	10	24A	E	32½	
KH, LH.....	10	24A	F	32½	

A—Aux. trans., 8 pt.

B—With Tim H100, 20 pt.; H200, 28 pt.; H300, 26 pt.

C—With Tim L100, 23 pt.; L200, 31 pt.; L300, 29 pt.

D—With Tim Q100, 31 pt.; Q200, 34 pt.; Q300, 32 pt.

E—With Tim S200, 38 pt.; S300, 39 pt.

F—With Tim U200, 38 pt.; U300, 39 pt.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
TH, TH339.....	110	13	Pos
RH, JH, KH, LH.....	152	19	Pos

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
Her JXD.....	75	*70 **60	56
Her WXL3.....	75	**62 **63	52
Her RXB, RXC.....	75	*122 **108	80
Her RXLD.....	80	175 *70	80
Her JXLD.....	75	**60	56

*—Front and intermediate.
**—Center and rear.

MAINTENANCE DATA

DUPLEX



Series TH, RH, JH, KH, LH

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

TUNE UP

TRUCK MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before	Spark Occurs °TC Wheel Teeth °TC B-Before	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
TH.....	Her JXD	6-4x4½	26-1000	5°B	.....	.008	.008	.010	AL	A5B	14mm	.025	.020	6°B	.....
TH339.....	Her JXLD	6-4x4½	26-1000	5°B	.....	.008	.008	.010	AL	A5B	14mm	.025	.020	6°B	.....
RH.....	Her WXL3	6-4½x4½	26-1000	5°B	.....	.012	.012	.016	AL	A5B	14mm	.025	.020	TC	.....
JH.....	Her RXB	6-4½x5½	26-1000	2°A	.....	.010	.010	.016	AL	A5B	14mm	.025	.020	.....	.....
KH.....	Her RXC	6-4½x5½	26-1000	2°A	.....	.010	.010	.016	AL	A5B	14mm	.025	.020	.....	.....
LH.....	Her RXLD	6-4½x5½	26-1000	2°A	.....	.010	.010	.016	AL	AT8	14mm	.025	.020	.....	.....

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
JXD.....	58	1.594	43	1.920
WXL3.....	102	2½	50	2½
RXB, RXC.....	102	2½	50	2½
RXLD.....	102	2½	50	2½
JXLD.....	58	1.594	43	1.920

FRONT END

TRUCK MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All Models.....	¼-½	1°	2°	8°

LUBRICATION

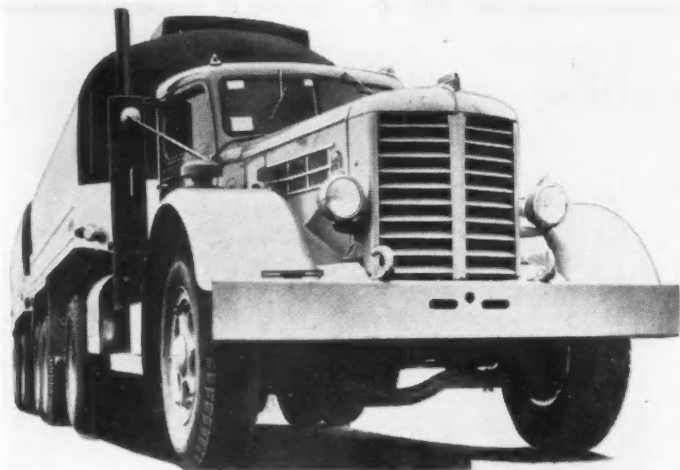
LUBRICATION		ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
		Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
MODEL											
TH, TH 339 RH, JH, KH, LH		40 above 80° 50 above 80°	30@32° to 80° 40@32° to 80°	20W below 32° 20W below 32°	140 149	90 90	140 Hyp 143 Hyp	90 Hyp 90 Hyp	A A	A A	B B

Hyp—Hypoid gear lube.

A—Special steering gear lube.

B—Chassis lube.

FEDERAL



Series 16M, 18M, 25M, 29M, 629M, 35M, 635M, 45M, 645M, 55M, 60M, 65M, 663M, 664M

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Pints	
16M	6	4	6	20	
18M, 18M2	9	4	8	25	
25M, 25M2	9	13		25	
29M, 629M Series	9	13*	12A	25	
35M, 35M2, 635M	8	20*		25	
45M, 45M2, 645M	8	20*	16A	31	
55M, 65MA	8	20*	19	31	
60MA, 60M2	10	12**	38	30	
65M2, 65MA	14	12**	40	40	
663MA, 664MA, 664MAB	14	12**	40A	40	

*—In "MA" Models add 10 pts. for aux. trans.
 **—In "MA" Models add 13 pts. for aux. trans.
 A—On 6-wheelers, same for each rear axle.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
16M, 18M, 25M, 29M, 629M, 35M, 635M Series	138	17	Pos
45M, 645M, 55M, 60M Series	163	19	Pos
65M2, 65MA, 663MA, 664MAB, 664MA Series	153*	19	Pos

*—2 Batteries.

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
16M, 18M, 25M, 29M, 629M Series	75	*60 **70	56
35M, 635M, 45M, 645M, 55M, 60M, 65M, 663M, 664M Series			

See data under CONTINENTAL, PAGE 92

*—Center and rear. **—Front and intermediate.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Flywheel Teeth °C B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
16M Series (1947-50)	Her JXE	6-3½x4¼	40-2500	5°A	.....	.008	.006	AC	44	14mm	.025	.020	10°B	3B	98
18M Series (1944-50)	Her JXB	6-3½x4¼	40-2500	5°B	.....	.008	.008C	CH	J10COM	14mm	.025	.020	10°B	3B	98
25M Series (1948-50)	Her JXC	6-3½x4¼	40-2500	5°B	.....	.008	.008C	CH	J10COM	14mm	.025	.020	10°B	3B	98
29M Series (1944-50), 629M Series (1948-50)	Her JXD	6-4x4¼	40-2500	5°B	.....	.008	.008C	CH	J10COM	14mm	.025	.020	10°B	3B	98
29ML, 629ML (1948-50)	Her JXLD	6-4x4¼	40-2500	5°B	.....	.010	.010	CH	J10COM	14mm	.025	.020	10°B	3B	98
35M, 635M Series (1948-50)	Con T6371	6-4½x4½	40-2500	16°B	.....	.022	.017			18mm	.025				
45M, 55M Series (1944-50), 645M Series (1948-50)	Con T6427	6-4½x4½	55-2600	16°B	.....	.022	.017			18mm	.025				
60M Series (1944-50)	Con 22R	6-4½x5¼	30-1000	5½°B	.....	.014	.012	CH	6COM	18mm	.025	.020	15°B		
65M, 663M, 664M Series	Con R-6602	6-4½x5¼	55-2600	6½°B	.....	.017	.017	CH	8COM	18mm	.025	.020	7°B		98

C—Cold.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
16M, 18M, 25M, 29M, 629M Series	52	1 1/8	31	1 1/8
29M L, 629ML Series		112 at 1.6	28 length	
35M, 635M, 45M, 645M, 55M Series	O. 129 I. 57	1.458 1 1/8	71 12.8	1 7/8 1 1/8
60M Series	O. 110 I. 50	1 1/8 1 1/8	68 3/4 22 1/2	2 1/4 2 1/4
65M, 663M, 664M Series	O. 160-170 I. 82-98	1 1/4 1 1/4	67-73 33-37	2 1/4 2 1/4

I—Inner. O—Outer.

FRONT END

MODEL	TOE-IN (inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All Models (1944-50)	★	1	3	8

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All Models (1944-50)	N-40, H-50 @ 50° to 110°	30@15° to 50°	10W@-20° to 15°	180	90	160	90			160

N—Normal service. H—Heavy duty.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
F1 (6-cyl.)	5A	23 $\frac{1}{2}$ BC	3		9
F1 (8-cyl.)	5A	23 $\frac{1}{2}$ BC	3		11 $\frac{1}{2}$
F2, F3 (6-cyl.)	5A	5B	3		9
F2, F3 (8-cyl.)	5A	5B	3		11 $\frac{1}{2}$
F3, Parcel Del.	5A	6	3		9
F4, F5, F5 COE (6-cyl.)	5A	5BD	5F		9
F4, F5, F5 COE (8-cyl.)	5A	5BD	5F		11 $\frac{1}{2}$
F6, F6 COE (226 cu in. 6)	5A	5D	10F		9
F6, F6 COE (8-cyl.)	5A	5D	10F		11 $\frac{1}{2}$
F6, F6 COE (254 cu in. 6)	6A	8	10F		9
F7	9A	10	11		16 $\frac{1}{2}$
F8	9A	10	22F		16 $\frac{1}{2}$

A—Refill shown—when filter replaced add 1 qt.
 B—Optional 3-speed H. D. Transmission—6 pts.
 C—Optional 4-speed Transmission—5 pts.
 D—Optional 4-speed Synchro-Silent Trans.—8 pts.
 E—Optional 2-speed axle on F5 or F6—15 pts.
 F—Optional 2-speed axle—19 pts.

MAINTENANCE DATA

FORD



BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
F1 thru F6 (6-cyl.)	100	17	Pos
F1 thru F4 (8-cyl.)	90	15	Pos
F5 and F6 (8-cyl.)	100	17	Pos
F5 Schoolbus	120	17	Pos
F7 and F8	120	17	Pos

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
F1 through F6	65-70	95-105	45-50
F7 and F8	65-70	120-130	52-60

Models F-1, F-2, F-3, F-4, F-5, F-6, F-7, F-8

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before	Spark Occurs Fly-Wheel Teeth °TC B-Before	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Intake	Exhaust	Make	Type	Size	Gap				
F-1, F-2, F-3, F-4, F-5, F-6	Own 7HT	6-3.3x4.4	50-2000	11°B		.015	A	B		CH	H-9	14mm	C	.025	TC		110
F-6	Own 8MTH	6-3.5x4.4	50-2000	11°B		.015	A	B		CH	H-9	14mm	C	.025	TC		110
F-1, F-2, F-3, F-4, F-5, F-6	Own 8RT	8-3.1x3 $\frac{3}{4}$	50-2000	TC		.015	D	E		CH	H-9	14mm	C	.015	2°B		110
F-7, F-8	Own 8EQ	8-3.1x4 $\frac{1}{2}$	50-2000	5°B		.015	.010-.012	.014-.016		CH	H-9	14mm	C	.015	4°B		112

A—.009-.011 cold. B—.013-.015 cold. C—.025-.028. D—.013-.015 cold. E—.017-.019 cold.
 Note: Previous setting on valve tappets on F7-F8 with hydraulic push rods, "O"

VALVE SPRINGS

MODEL ENGINES	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
6-cyl. 226 engine	112-120	1.75	47-53	2.109
6-cyl. 254 engine	112-120	1.75	47-53	2.109
8-cyl. 239 engine	76-80	1.84	37-40	2.13
8-cyl. 337 engine	140-152	1.32	62-68	1.68

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All F-Series Trucks	0- $\frac{1}{8}$	$\frac{1}{4}$ -1	1-3 $\frac{1}{2}$	7 $\frac{1}{4}$ -8

LUBRICATION

MODEL	ENGINE	TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range	Summer	Winter	Summer	Winter	Summer	Winter	
F-1	F-7 and F-8 Heavy Duty Oils recommended. F-1 thru F-6 Regular Premium or Heavy Duty oils depending on type of service. Temps. above +32°F: SAE 30. Min. Temps. above +10°F: SAE 20 or 20W. Min. Temps. above -10°F: SAE 10 or 10W. Lower than -10°F: 10W plus 10% kerosene.	90EP	80EP	90HM	90HM	90EP	90EP	140EP
F-2, F-3, F-4, F-5, F-6 COE		a140EP	§90EP	140EHM	90EHM	90EP	90EP	140EP
F-6, F-6 COE		140EP	90EP	†90HM	†90HM	90EP	90EP	140EP
F-7, F-8		140EP	90EP	†90HM	*90HM	90EP	90EP	140EP

EP—Mild extreme pressure gear oil. HM—Hypoid or multi purpose lubricant. *—Temps. below -10°F use SAE 80. †—Temps. above 100°F use SAE 140.
 a—F3 parcel delivery SAE 90 mild E. P. gear oil. §—F3 parcel delivery SAE 80 mild E. P. gear oil. EHM—Mild E. P. gear oil, or multi purpose lube.

FWD



Models HA, HG, HR, H6x6, LD, SU, YU, ZU, M7, M7D, M10, M10D, M6x6, M6x6D, MU6x6

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
HA, HR, HRT, H6X6	10	20	5A	28
LD	12	20	5A	28
SU	6	6	9C	16
YU (1948-50 only)	12	24	8A	32
ZU	14	28	12A	46
M7	14	28	8A	46
M10	20	28	18B	64
M6X6	20	28	20B	64
M7D	20	28	18B	64
M10D	24	28	20B	64
M6X6D	24	28	20B	64
MU6X6	20	28	12A	64

A—Same for front axle.
B—Front axle 16.
C—Front axle 6.

BATTERY

MODEL	Amp. Hr. Capacity	Numbers of Plates	Terminal Grounded
LD	130	19	Pos
HA, HR, HRT, HG, SU*, YU*, ZU*, M6X6*, M7*, M10*	150	19	Pos
M7D**, M10D**, M6X6D**	150	19	Pos
H6X6, MU6X6*	153	19	Pos

*—2 Batteries.

**—4 Batteries.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
Wau BZ	73-75	87-93	66-70
Wau MZA	73-75	96-100	66-68
Wau SRKR	73-75	129-133	121-125
Wau 140 GK	130-134	130-134	96-100
Wau 140 GZ	130-134	130-134	120-125
Wau 145 GK	150	242-250	65-70
Bud 8DC 844	150-160	245-275	150-160
Her QXLD-3	60	60*	39

*—Cent. and rear, bal. 70.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
HA	Wau BZ	6-4x4 1/2	40-1500	TC	O	.010	A	B	CH	J9	14mm	.025	.020	4°A	1 1/2	109
HR, HG, HRT, H6X6	Wau MZA	6-4 1/2 x 4 3/4	40-1500	8°B	3B	.008	C	D	CH	7COM	14mm	.025	.020	5°B	2	115
SU	Wau SRKR	6-4 1/2 x 5 1/2	40-1500	8°A	3A	.004	C	E	CH	J9	14mm	.025	.020	4°B	1 1/2	119
YU	Wau 140GK	6-4 1/2 x 5 1/2	40-1500	5°A	1 1/2 A	.010	A	D	CH	6COM	18mm	.025	.020	TC		130
ZU	Wau 140GZ	6-4 1/2 x 5 1/2	40-1500	5°A	1 1/2 A	.012	.012	.018	CH	6	18mm	.025	.020	TC		130
M7, M10, M6X6, MU6X6	Wau 145GK	6-5 1/2 x 6	40-1500	5°A	2A	.006	F	G	CH	6	18mm	.025	.020	TC		120
M7D, M10D, M6X6D	Buda 844	6-5 1/2 x 6 1/4	30-1200	20°B		.010	.015	.015		Di esel						390
LD	Her QXLD-3	6-3 3/4 x 4 1/4	35-1600	5°B		.006	.008	.010	AL	AT8	14mm	.025	.020	6°B		
A—.010—.012 cold.		B.014—.016 cold.		C—.009—.010 cold.		D—.018—.021 cold.		E—.024—.026 cold.		F—.012—.014 cold.		G—.023—.025 cold.				

A—.010-.012 cold.

B.014-.016 cold.

C—.009-.010 cold.

D—.018-.021 cold.

E—.024-.026 cold.

F—.012-.014 cold.

G—.023-.025 cold.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
H6X6	100	1 1/2	64	2 1/2
HA	101-119	1 3/4	56-66	2 1/2
LD	39	1 1/2	18	1
HG, HR, HRT	93-109	1 1/2	59-69	2 1/2
SU	89-99	2 1/2	54-64	2 1/2
YU, ZU (1948-50)	86-96	2 1/2	31-42	1
M7, M10, M6X6, MU6X6	105-115	3 1/2	65-75	3
M7D, M10D, M6X6D	175	2 1/2	65	2 3/4

FRONT END

MODEL	TOE-IN (inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
HA, HR, HRT, HG	1 1/8	1	2	8
LD	1 1/8	3/4	2	0
SU (1950)	1 1/8	1	2	8
YU, (1948-50 only), ZU H6X6, MU6X6	1 1/8	1	2	8
M7, M10, M6X6, M7D, M10D, M6X6D	1 1/8	0	5	0

LUBRICATION

MODEL	ENGINE			TRANSMISSION		FRONT AND REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
HA, HR, HRT, HG, H6X6	(S) L30, H40	(MW) L20, H30	(W) L10W, H20W	140	90	90EP	80EP	140	90	140-90
M7, M10, M6X6, MU6X6	(S) L40, H50	(MW) L30, H40	(W) L20W, H30W	140	90	90EP	80EP	140	90	140-90
SU, YU, ZU	(S) L40, H50	(MW) L30, H40	(W) L10W, H20W	140	90	90EP	80EP	140	90	140-90
M7D, M10D, M6X6D	50 above 90°	30@32° to 90°	10 below 32°	140	90	90EP	80EP	140	90	140-90
LD	(S) L30, H40	30-50°, L30, H40	0-30°, L20, H20*	140	90	90EP	80EP	140	90	140-90

H—Heavy duty.

L—Light duty.

EP—Extreme pressure lube.

S—Summer.

W—Winter.

MW—Mild winter.

*—Below 0°, L10, H10.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
100 FC	8	1 1/2a	4 1/2	17	
150 FC, FP	8	1 1/2a	4 1/2	18	
250 FC	8	6	8 1/2	18	
280 FC, 300 FC, FCS	8	6b	11 1/2	18	
350 FC, FF	8	6b	12 1/2	18	
400 HCS	8	12	12	18	
400 HCW	8	6c	8 1/2	18	
450 HC, HCS, HF, HFR	8	12	20 1/2	18	
470 HC, HF	8	12	22 1/2	18	
520 HC, HCR, HCS, HF, HFR	9	12d	20	25	
600 HC, HF	9	12df	22 1/2	25	
620 HC, HCR, HF, HFR	9	14f	22 1/2	25	
700 HC, HF	9	9	22 1/2	27	
640 HC, HCR, HF, HFR	11	14	22	26	
640 HCR, 650 HCR	11	12df	22 1/2	25	
650 HC, HF	9	9f	22 1/2	25	
720 HC, HCR, HF, HFR	9	9f	22 1/2	25	
720 HCW, HFW	9	9f	22 1/2	25	
740 HC, HCR, HF, HFR	9	9f	30r	27	
740 HDC, HCR, HDF	11	9f	30r	26	
750 HC, HCR, HF, HFR	9	9f	20j	27	
890 HC	9	9f	20j	27	
750 HDC, HCR, HDF	11	9	20j	26	
750 HDCW	11	9	22 1/2	26	
770 HC	9	14ef	38	27	
850 HC, HF	9	9ef	38k	27	
850 HCW	9	9ef	32 1/2	27	
870 HC	9	9ef	24	27	
870 HDC	11	9ef	24	26	
900 HDC	15	9g	38	37	
900 HCR	15	9	32	37	
910 HDC	15	9g	30 1/2	37	
940 HDC	15	9g	20	37	
950 HDCW	15	9g	17 1/2	37	
970 HDCW	15	9	32 1/2	37	

a—Standard trans. and axles.
 †—Each axle.
 a—4-spd. trans., 6 pts.
 b—With 5-spd. trans., 12 pts.
 c—Aux. trans., 6 pts.
 d—4452, 4453, 4-spd. trans., 14 pts.
 e—5552, 5553, 5-spd. trans., 9 pts.
 f—Aux. trans., 8 pts.
 g—Aux. trans., 12 pts.
 h—With 2-spd. axle, 13 pts.

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
228, 248, 270	124-140	1.505	53-63	1.821
318, 360	145-157	1 1/8	67 1/2-74 1/2	1 1/8
426, 503	160-172	1 1/8	67 1/2-74 1/2	1 1/8
All Diesels	140	1 1/8	44	2 1/8

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Valve Closes B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before	Comp. Pressure at Cranking Speed
				°C	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Intake	Exhaust	Make	Type	Size	Gap			
100 FC, 150 FC, 250 FC, 280 FC	Own 228	6-3 1/8 x 3 1/2	35-40	14°B	.....	.014	.012	.020	.020	AC	44 COM	14mm	.030	A	0°B	110
300 FC, FCS, 350 FC, FF, 400 HCS, HCW	Own 248	6-3 1/8 x 3 1/2	35-40	14°B	.....	.014	.012	.020	.020	AC	44 COM	14mm	.030	A	5°B	110
450 HC, HCS, HF, HFR, 470 HC, HF	Own 270	6-3 1/8 x 4	35-40	14°B	.....	.014	.012	.020	.020	AC	44 COM	14mm	.030	A	5°B	110
520 HC, HCR, HF, HFR, HCS, 600 HC, HF, 650 HC, HF	Own 318	6-3 7/8 x 4 1/2	35-40	16°B	.....	.022	.012	.018	.018	AC	44 COM	14mm	.030	A	6°B	110
620 HC, HCR, HF, HFR, 700 HC, HF, 770 HC	Own 360	6-4 1/8 x 4 1/2	35-40	16°B	.....	.022	.012	.018	.018	AC	44 COM	14mm	.030	A	6°B	110
640 HC, HCR, HF, HFR, 720 HC, HCR, HF, HFR, HCW, HFW, 870 HC	Own 426	6-4 1/4 x 5	35-40	30°24°B	.....	.022	.012	.018	.018	AC	44 COM	14mm	.030	A	6°B	110
740 HC, HCR, HF, HFR, 750 HC, HCR, HF, HFR, 850 HC, HCW, HF, 890 HC	Own 503	6-4 1/8 x 5 1/2	35-40	30°24°B	.....	.022	.012	.018	.018	AC	44 COM	14mm	.030	A	2°B	110
640, 650, 740, 750 HCR, 740, 750 HDC, HDF, 870 HDF, 750 HDCW	Own 4-71	4-4 1/4 x 5	4* @ Idle 25* @ Gov.	†	.....	a	b	.....	.....	.....	Di esel	.....	.....	.....	.....	.....
900 HCR, 900, 910, 940 HDC, 950, 970 HDCW	Own 6-71	6-4 1/4 x 5	4* @ Idle 25* @ Gov.	†	.....	a	b	.....	.....	.....	Di esel	.....	.....	.....	.....	.....

A—.018"-.024" *—Minimum.
 a—Injector—Timing gage ht.—1.460".

†—Injection begins 13° before TDC; ends 3° before TDC. Air intake opens 46° before TDC; closes 46° after TDC.
 b—Exhaust valve—.008" GO—.010" NO GO (Hot).

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
FC, FCS, and FF (1950), HCS-400 through HF-470	20 above 32° 30 above 32°	10W below 32° 10W below 32°	50ES 50ES	50ES 50ES	90 Hyp(A) 90 Hyp(A)	90 Hyp(B) 90 Hyp(B)	No. 1 SG No. 1 SG	No. 1 SG No. 1 SG	50ES 50ES
HC-520 through HC-890	H30 above 32°	H20W — 30°-0°	50ES	50ES	90 Hyp(A)	90 Hyp(B)	No. 1 SG	No. 1 SG	50ES

H—Heavy duty.
 B—Use 80 Hyp below 0°.

*Worm axles straight gear, oil.
 Hyp—Hypoid truck-type.

ES—Aviation grade engine oil or heavy duty engine oil.
 No. 1 SG—No. 1 grade steering gear lubricant.

A—Severe conditions use 140 Hyp.

MAINTENANCE DATA

GMC

Series FC, FF, FP, HC, HF and DIESELS

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
100, 150, 250, 280, 300, 350, 400 HCW; 450 HC, HF, HFR; 470 HC, HF	100	15	Pos
300 FCS; 400 HCS; 450 HCS; 520 HCS	125	19	Pos
520, 600, 640, 650, 700, 720, 750, 770, 850, 870, 890	115	17	Pos
All Diesels	205	27	Pos

J—Heavy duty, 2-spd. axle, 32 pts.
 k—2-spd. axle, 39 pts.
 l—2-spd. axle, 34 pts.
 m—With heavy duty axle, 12 pts.
 n—DR dual, 14 pts.
 o—DR dual, 26 pts.
 p—HCS, Eaton, 2-spd.; 20 pts, Timken 2-spd., 26 pts.
 q—DR, 19 pts.
 r—DR, 36 pts.
 s—Torque divider, 8 pt.
 DR—Double red. axle.
 2S—2-speed.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
228, 248, 270	70-80	80-90	40-45
318, 360	75-80	90-100	65-75
426, 503	75-80	90-100	80 min.
All Diesels	165-175	155-185	65-75

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
100 FC	1/8-1/4	1°30'	0°20'	7°10'
150 FC	1/8-1/4	1°30'	0°30'	7°10'
150 FP	1/8-1/4	1°30'	2°30'	7°10'
250 FC, 280 FC	1/8-1/4	1°30'	1°	7°10'
300 FC, FCS	1/8-1/4	1°30'	1°15'	7°10'
350 FC	1/8-1/4	1°30'	0°30'	7°10'
350 FF	1/8-1/4	1°30'	1°25'	7°10'
400 HCS, HCW, HC, HCS; 470 HC	1/8-1/4	1°	1°45'	5°
450 HF, HFR; 470 HF	1/8-1/4	1°	2°30'	4°
520 HC, HCR	1/8-1/4	30°1'	2°30'	5°
520 HCS, HF, HFR; 600 HC, HF; 620 HC, HCR, HF, HFR; 640 HC, HCR, HF, HFR; 650 HC, HF; 700 HC; 640 HCR; 650 HCR; 720 HC, HCR, HCW; 740 HC, HCR, HDC, HCR; 750 HC, HCR, HDC, HCR; 750 HCW; 910 HDC	1/8-1/4	30°1'	2°30'	4°
700 HF; 740 HF, HFR, HDF; 750 HF, HFR, HDF, HFR; 770 HC; 850 HC, HCW, HF; 870 HC, HDC; 900 HDC, HCR; 950 HDCW; 970 HDCW	1/8-1/4	30°1'	2°30'	5°30'
890 HC; 940 HDC	1/8-1/4	30°1'	2°30'	8°

*—Figures for vehicle loaded.

Vehicle light minimum caster 1°.

INTERNATIONAL



Models L, LC, LF and LM Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95.

CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
L-110, 111, 112, 120, 121, 122	7	3a	4	17
LM-120, 121, 122	7	6	4	17
L-130, 131, 132	7	5a	5	17
L-150, 151, 152, 153	7	5b	5	18
LM-150, 151, 152	7	6	5	17
L-160, 161, 162, 163, 164, 165, LC-160, 161, 162	7	8	8c	18
L-170, 171, 172, 173, 175, LF-170, 171, 172	7	8d	8c	21
L-180, 181, 182, 183, LC-180, 181, 182	7	12	11e	21
L-184	7	12	20fg	21
L-174	7	8d	11e	21
L-185	9	12h	11e	28
L-190, 191, 192, 193, 195	9	19	20fg	28
L-194, 200, 201, 202	9	19	18fg	28
LF-190, 191, 192	9	19	11	28
L-204	9	19	38j	28
L-205	9	24	18f	28
L-210, 211	9	24	38j	28
LF-210, 211, 212	9	24	11	28

a—Optional transmission—6 pints.
b—Optional transmission—8 pints.
c—With optional 2-speed axle—13 pints.
d—With optional transmission—12 pints.
e—With optional 2-speed axle—20 pints.
f—With optional 2-speed axle—22 pints.
g—With optional 2-reduction axle—19 pints.
h—Optional transmission F-52 or F-52-C—19 pints.
j—Optional 2-speed axle—37 pints.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
SD-220, SD-240	105		Pos
BD-269	135		Pos
RD-372, RD-406, RD-450, Cont. R-6602	152		Pos

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
SD-220, SD-240	85-95	75-85	45-55
BD-269	75-85	100-110	60-70
RD-372, RD-406, RD-450	100-110	100-110	75-85
Cont. R-6602	100-110	105-115	100-110

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Intake Exhaust	Make	Type	Size	Gap				
L-110 to L-153, inc. LM-120 to LM-150, inc.	SD-220	6-3 1/2"x3 1/2"	15-20*	10°B		.023	F	F	a	14mm	.030	.022	2°B		
L-160 to L-165, inc. LC-160, 161, 162	SD-240	6-3 3/4"x4 1/4"	15-20*	10°B		.023	F	F	a	14mm	.030	.022	2°B		
L-170 to L-184, inc. LC-180, 181, 182	BD-269	6-3 3/4"x4 1/4"	15-20*	5°B		.023	F	F	b	14mm	.030	.022	3°B		
L-185, L-190 to L-195, inc.	RD-372	6-4 3/8"x4 1/2"	15-20*	8°B		.023	F	F	c	14mm	.030	.022	5°B		
L-200, 201, 202, 204, LF-190, 191, 192	RD-406	6-4 3/8"x4 1/2"	15-20*	8°B		.023	F	F	c	14mm	.030	.022	5°B		
L-210, 211, LF-210, 211, 212	RD-450	6-4 3/8"x5"	15-20*	8°B		.023	F	F	c	14mm	.030	.022	5°B		
L-220, L-225	Cont. R-6602	6-4 3/8"x5 1/2"	15-20*	12°B		.020	.020	.020	d	18mm	.025				

*—Minimum at idle.

F—.018—.020.

D—.018—.024.

a—AC-44 Com., Champion J-7, Auto-Lite AN5.

c—AC-43 Com., Champion J-6, Auto-Lite AN5.

d—AC-82 Com., Champion 5 Com., Auto-Lite BT4.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
SD-220, SD-240	145	1.683		2 1/8*
BD-269	107	1.668		2 1/8*
RD-372, RD-406, RD-450	L. 85 1/2	1.503		2 1/8*
	O. 137	1.706		2 1/8*
Cont. R-6602	L. 85	1.750		2 1/8*
	O. 165	1.750		2 1/8*

*—Free length.

O—Outer.

I—Inner.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
L-110, 111, 112, L and LM-120, 121, 122, L-130, 131, 132	1/8-3/8	2	2-3	4
All Other Models	1/8-3/8	1	2-3	4

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
SD	M30 above 32°	20W above 10°	10W below 10°	140a	90	140a	90			
BD, RD, R-6602	M40 above 32°	20W above 10°	10W below 10°*	140a	90	140a	90			
SD	H SAE 40†			140a	90	140a	90			
BD, RD, R-6602	H SAE 50†			140a	90	140a	90			

*—Temperatures below -10° F, use SAE 10W + kerosene.
H—Highway service with sustained high engine speeds.

†—If starting ability will not permit, use next lower viscosity.
a—Use SCL, EP gear oil or multipurpose gear lubricant.

M—Multi-stop service, no sustained high engine speeds.
EP—Truck-type extreme pressure lube.

KENWORTH

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Pints	
521, 522	20	16	38	54	54
523	20	16	17ea	54	54
524	20	16	32ea	54	54
548	20	16	26ea	54	54
552	20	16	26ea	54	54
584	20	16	28ea	54	54
585	10	24	30	58	58
825	20	16	32ea	54	54
829	10	24	14ea	58	58
888	28	16		54	54

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Gasoline Models (1946-50)	168*	21	Pos
All Diesel Models (1946-50)	168**	21	Pos

*—2 Batteries **—4 Batteries.



TENSIONS

ENGINE MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
Cum HB-600			
NHB-600	430-450	310-330	105-115
Wau 140GZB	175	125-133	95-100

Models 521, 522, 523, 524, 548, 552, 584, 585, 825, 829, 888

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure a Cranking Speed
				*TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Intake Exhaust	Make	Type	Size	Gap				
521, 522, 523, 524, 548, 552, 584, 825	Cum HB-600	6-4 $\frac{1}{2}$ x6	55	5°B			.014	.022		Diesel	.025	.020	0°		525
585, 829	Wau 140GZB	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	40-2600	15°B			.014C	.025C		14mm					130
888	Cum NHB-600	6-5 $\frac{1}{2}$ x6	55	20°B			.014	.027		Diesel					

C—Cold

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
521, 522, 523, 524, 548, 552, 584, 825	136	2 $\frac{1}{8}$	87	2 $\frac{1}{8}$
888	109	1 $\frac{1}{2}$	78	2 $\frac{1}{4}$
585, 829	*127	1 $\frac{1}{2}$	67	2 $\frac{1}{8}$
	**70	1 $\frac{1}{8}$	30	1 $\frac{1}{8}$

*—Outer spring ** Inner spring.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
521, 522, 523, 524, 548, 585, 825, 829, 552	$\frac{1}{8} \pm \frac{1}{2}$	1	2 $\frac{1}{2}$ -3	5 $\frac{1}{4}$
584, 888	$\frac{1}{8} \pm \frac{1}{2}$	1	1 $\frac{1}{2}$ ± $\frac{1}{4}$	0

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
521, 522	(S)30	(W)20		*50	*50	140EP	90EP	140	140	140
523, 524, 548, 552, 584, 825, 888	(S)30	(W)20		*50	*50	140	90	140	140	140
829	(S)30	(W)20		140	90	140	90	140	140	140
585	(S)40, 50-70°	(W)20, below 30°		140	90	140EP	140EP	140	140	140

S—Summer. W—Winter. *—Straight mineral oil. EP—Extreme pressure lube.

MARMON-HER.



Models DVL-4, LD7 and Q, R, MH, MH-RH, MH-RC, V5, V6 Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
DVL-4	4½	4	a	17	
LD7	5	5	2½	21	
R-3	5	5	3c	23	
R-4	5	5	5½	23	
R-5, R-6, V5, V6	5	5	5½	23	
Q Series	5	5	5½	23	
MH440-4	8	16	15x	32	
MH440-6	9	24	21f	36	
MH555-4	9	24	21f	36	
MH555-6	13	24	21f	36	
MH-RH	13	24	21f	36	
MH-RC	10	16	15e	32	

a—Front axle only. b—Front axle, 3½ pt.
c—Front axle, 2½ pt. d—Front axle, 6½ pt.
e—Front axle, 20 pt. f—Front axle, 24 pt.
x—Each of two axles.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
DVL-4	120	17	Pos
LD7 and R & V Series	100	17	Pos
Q Series	120	17	Pos
MH440-4, MH440-6	160	17	Pos
MH555-4, MH555-6, MH-RH, MH-RC	120*	13	Pos

*—12-Volt Battery.

TENSIONS

MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
DVL-4	60-65	65-70	50-55
LD7, R, Q & V Series	55-60	95-105	45-50
MH440-4, MH440-6	60	70* 105**	105 53†
MH555-4, MH555-6	75	105* 123**	105 115†
MH-RH	80	70*, 175	80
MH-RC	75	105	90

*—Center and rear. **—Front and intermediate.
†—With ⅜ in. con. rod. ‡—With ½ in. con. rod.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.H.	Intake Valve Opens B-Before A-After		Intake Tapet Clearance for Valve Timing		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs TC B-Before A-After	Spark Occurs Flywheel Teeth TC B-Before A-After	Comp. Pressure at Cranking Speed
				°C	Flywheel Teeth TC	Intake	Exhaust	Intake	Exhaust	Make	Type	Size	Gap				
DVL-4 (1948-50)	Willlys-CJ-3A	4-3½x4½	50-30	9°B	TC	.017	.014	.014	.014	AL	AN-7	14mm	.030	.020	TC	TC	115
LD7 and R Series, V5, V6	Ford 239	8-3½x3½	57-2000	TC	TC	.015	A	B	B	CH	H-9	14mm	.015	.015	2°B	TC	110
Q Series	Ford 337	8-3½x4½	50-2000	14°B	TC	.015	A	B	B	CH	H-9	14mm	.015	.015	4°B	TC	112
MH440-4, MH440-6 (1948-50)	Her WXL3	6-4½x4½	36-1600	2°A	TC	.010	.006	.010	.010	CH	H-10	14mm	.025	.020	TC	TC	103
MH555-4, MH555-6 (1948-50)	Her RXC	6-4½x5½	26-2600	2°A	TC	.010	.006	.010	.010	CH	NO8	18mm	.025	.020	TC	TC	103
MH-RH	Her RXLDH	6-4½x5½	26-1600	2°A	TC	.010	.006	.010	.010	CH	H-10	14mm	.025	.020	TC	TC	103
MH-RC (1950)	Her RXC	6-4½x5½	26-1600	2°A	TC	.010	.006	.010	.010	CH	H-10	14mm	.025	.020	TC	TC	103

a—.010-.012 cold. b—.014-.016 cold. c—.029-.032.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
DVL-4	116	1¾	50	2½
LD7 and R Series, V5, V6	76-80	1.84	37-40	2.13
Q Series	140-152	1.32	62-68	1.68
MH440-4, MH440-6, MH555-4, MH555-6, MH-RH, MH-RC	102	2½	50	2¾

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
DVL-4	0-½	½	2	9
LD7	0-½	½	1-2	8½
R-3, R-4	0-½	0	2½	8½
R-5, R-6, V5, V6	0-½	0	1½	0
Q Series	0-½	½	5	8
MH440-4, MH440-6, MH-RC	0-½	0	0-1	2
MH555-4, MH555-6, MH-RH	0-½	0	0-1	1½

LUBRICATION

LUBRICATION	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	MODEL	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer		Winter
DVL-4	(S)30	(W)20	10W below 10°	140	90	140A	90A	140	140	140
LD7	30 above 32°	20W 10° to 32°	10W@-10° to 10°	140	90	90B(Hyp)	90B(Hyp)	90EP	90EP	140
R-3, R-4	30 above 32°	20W 10° to 32°	10W@-10° to 10°	140	90	140B	90B	90EP	90EP	140
R-5, R-6	30 above 32°	20W 10° to 32°	10W@-10° to 10°	140	90	90B	90B	140	140	140
Q Series	30 above 32°	20W 10° to 32°	10W@-10° to 10°	140	90	140B	140B	140	140	140
MH Series, MH-RH, MH-RC	(S)40	(W)20	10W below 10°	140	90	140B	90B	140	140	140
V5, V6	(S)30	(W)20	10W below 10°	140	90	140B	90B	90	90	140

*—Below—10°, use 10% kerosene. a—Front axle only. b—Same for front axle. (S)—Summer. (W)—Winter. (EP)—Mild extreme—pressure lube. (Hyp)—Hypoid gear lube.

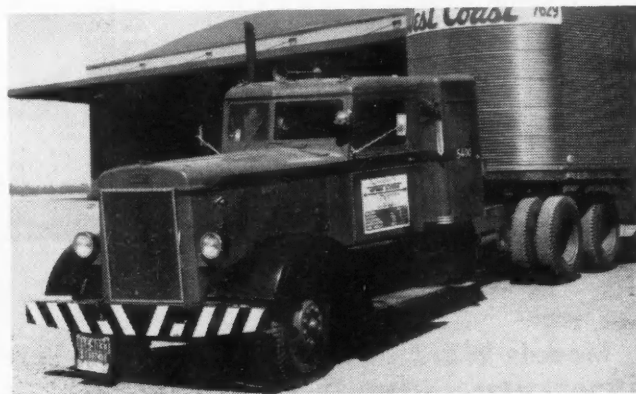
MILFORD

MAINTENANCE DATA

PETERBILT



Models QX, QY



Models 280, 350, 360, 370, 380, 390

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
MILFORD—QX	168	21	Pos
QY	120	17	Pos
PETERBILT—All Models	152*	19	Pos

*—2 Batteries.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
MILFORD			
QX	73-75	96-100	67-69
QY	130-134	130-134	121-125
PETERBILT			
All Models	430-450	310-330	105-115

CAPACITIES

MODEL	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
MILFORD—QX	8	12	9ea	34
QY	10	12	17ea	56
PETERBILT—280	20	18	26	60
350	20	18	14ea	60
360, 370, 380, 390	20	18	20ea	60

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG	Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Exhaust	Make Type Size Gap				
MILFORD—QX	Wau 6MZA	6-4 1/4 x 4 3/4	40-1500	8°A	.....	.008	.010C .018C	CH 7 COM 18mm .025	.018	24°B	115
QY	Wau 140GK	6-4 1/4 x 5 1/2	40-1500	5°A	.....	.008	.010C .016C	CH 7 COM 18mm .025	.018	TC	130
PETERBILT—All Models	Cum HB600	6-4 7/8 x 6	55	15°A	.....	.025	.025	Die sel			

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
MILFORD—QX	101	1 1/2	64	2 1/2
QY	86	1 1/2	31	2 1/2
PETERBILT—All Models	55	1 1/8	26	1 1/8
	136	2 1/8	87	2 1/8

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
MILFORD—All Models	0-1/8	1	N1	8
PETERBILT—All Models except as noted	0-3/8	1	1 1/2	8
All 1950 Models with FE 900 Axle	0-3/8	1	1 1/2	5 1/2

N—Negative.

LUBRICATION

MODEL	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	UNI- VERSAL JOINT
MILFORD—All Models.....	40 above 50°	30@30°-50°	20W below 30°	140	90	140	90	140	90	140
PETERBILT—All Models.....	30 above 90°	20@60°-90°	10@10°-60°	140	90	140	90	140	90	140
S—Summer. W—Winter.										

S—Summer. W—Winter.

OSHKOSH



TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
Her WXLCO-3...	85	Note 1	53
Her RXC, RXCO...	85	Note 2	115
Her RXLD...	100	175	158
Her DRXC...	Note 3	175	158
Her JXLD...	95	Note 6	52
Cum HB-600, HRB600, NHRB600, NHRBS600...	430-450	310-330	105-115
Bud 6DC-844			
Bud 6DCS-844			
Bud 6MO-779			
Bud 6M-693	Note 4	245-275	150-160
Hall-Scott 400...	Note 5	180-200	130-140

Note 1—Front intermed. 105; CTR & RR 70.
 Note 2—Front intermed. 123; CTR & RR 105.
 Note 3— $\frac{3}{8}$ "-175, 1"-250.
 Note 4— $\frac{3}{8}$ "-95-105; $\frac{5}{8}$ "-150-160.
 Note 5—Large 230-250; small 30-40.
 Note 6—Front intermed. 70; CTR & RR 60.

CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
W-212	8	16	18h	32
W-312	7	18a	21k	38
W-1700	10	24a	25b	48
W-700	10	24a	15c	48
W-703, W-705, W-703-D	13	24a	15c	48
W-712	13	24a	15c	48
W-906	18	22d	24e	40
W-906R	35	22d	24e	40
W-2200, W-2201	24	22d	24e	80
W-2204	24	22d	40f	80
W-2205	24	29g	40f	80
W-2206	16	29g	40f	75
W-2208	35	22d	40f	66
W-2209	35	29g	40f	66
W-703-6X6	13	24g	32h	46
W-1600 Series	24	22d	25c	84

a—Aux. trans. 6 $\frac{3}{4}$.
 b—Front axle 24.
 c—Also front axle.
 d—Aux. trans. 17.
 e—Front axle 25.
 f—Front axle 36.
 g—Aux. trans. 12.
 h—Front axle 15.
 k—Front axle 11.

Models W212, W312, W1700, W700, W703, W703D, W705, W712, W906, W906R, and W1600, W2200 Series

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

BATTERY

MODEL	App. Hr. Capacity	Number of Plates	Terminal Grounded
All Gasoline Models	153	19	Pos
All Diesel Models	204	25	Pos

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
W-212	Her JXLD	6-4x4 $\frac{1}{2}$	35-1600	5°B	...	.012	.010	.010	CH	J-6	14mm	.025	.020	...	...	...
W-312	Her WXLCO-3	6-4 $\frac{1}{2}$ x4 $\frac{1}{2}$	26-1600	2°A	...	.014	.012	.012	CH	J-10	14mm	.025	.020	...	...	...
W-1700	Her RXC	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	36-1600	2°A	...	.010	.010	.016	CH	0 COM	$\frac{1}{8}$ -18	.025	.020	...	...	...
W-700	Her RXCO	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	36-1600	2°A	...	.010	.010	.016	CH	0 COM	$\frac{1}{8}$ -18	.025	.020	...	...	...
W-703, W-705, W-703-6X6	Her RXLD	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	36-1600	2°A	...	.010	.010	.016	CH	0 COM	$\frac{1}{8}$ -18	.025	.020	...	...	...
W-703-D	Her DRXC	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	30-1200	12°B	...	.016	.016	.016	CH	0 COM	Die sel	...	...	...	...	...
W-712	Her RXLDH	6-4 $\frac{1}{2}$ x5 $\frac{1}{2}$	2°A	...	...	.010	.010	.016	CH	6 COM	18mm	.025	.020	...	...	...
W-906R	Cum HRB600	6-5 $\frac{1}{2}$ x6	5°B	...	...	.014	.014	.022	CH	6 COM	18mm	.027	.018	...	...	...
W-2200	Bud 6MO-779	6-5 $\frac{1}{2}$ x6	35-1800	20°B	...	.018	.015	.015	CH	8 COM	18mm	.027	.018	...	...	...
W-2201, W-1600-BG	Bud 6MO-693	6-5 $\frac{1}{2}$ x6	35-1800	20°B	...	.018	.015	.015	CH	8 COM	18mm	.027	.018	...	...	...
W-2204, W-1600-BD	Bud 6DC-844	6-5 $\frac{1}{2}$ x6	35-1800	20°B	...	.018	.015	.015	CH	8 COM	18mm	.027	.018	...	...	...
W-1600-CD, W-906	Cum HB-600	6-4 $\frac{1}{2}$ x6	5°B	...	...	.014	.014	.022	CH	6 COM	18mm	.025	.020	...	...	...
W-2205	Bud 6DCS-844	6-5 $\frac{1}{2}$ x6 $\frac{1}{2}$	30-1200	45°B	...	.010	.015	.015	CH	A	18mm	Die sel	...	...	...	...
W-2206	Hall-Scott 400	6-5 $\frac{1}{2}$ x7	55°B	...	...	.021	.021	.030	CH	A	18mm	Die sel	...	...	...	...
W-2208	Cum NHRB-600	6-5 $\frac{1}{2}$ x6	20°B	...	...	.014	.014	.027	CH	A	18mm	Die sel	...	...	...	...
W-2209	Cum NHRBS-600	6-5 $\frac{1}{2}$ x6	20°B	...	...	.014	.014	.027	CH	A	18mm	Die sel	...	...	...	...

A—Two per cyl.; exhaust No. 6, intake No. 9. B—.018-.022.

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Her WXLCO-3, RXC, RXCO, RXLD, RXLDH	102	2 $\frac{1}{2}$	50	2 $\frac{1}{2}$
Her DRXC	48	1.449	27	1.844
	30	1.355	17	1.750
Her JXLD	58	1.594	43	1.920
Cum HB-600, HRB-600	129-143	2	83-91	2 $\frac{1}{2}$
Cum NHRB-600, NHRBS-600	104-114	1 $\frac{1}{2}$	74-82	2 $\frac{1}{4}$
Bud 6MO-779, 6MO-693, 6DC-844, 6DCS-844	144-155	2 $\frac{1}{2}$	62-68	2 $\frac{3}{4}$
Hall-Scott 400	243	2.000	115	2.485
	243	1.941	115	2.423

O—Outer. I—Inner.

FRONT END

MODEL	TOE-IN (inches)	CAMBER (in degrees)	CASTER (in degrees)	K.P. SLANT (in degrees)
W-212, W-312, W-1700, W-700, W-703, W-705, W-703-D, W-703-6X6, W-712	0- $\frac{1}{8}$	1°	1°	3°
W-906, W-906R, W-1600, W-2200, W-2201, W-2204, W-2205, W-2206, W-2208, W-2209	0- $\frac{1}{8}$	$\frac{1}{2}$ °	1°	3°

LUBRICATION

LUBRICATION	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	ENGINE MODEL	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer		Winter
W-212, W-312	40 above 40°	30@10° to 40°	20 below 10°	140A	90A	140Hyp	90Hyp	140A	140A	C
W-1700, W-700, W-703, W-705, W-703-6X6, W-712	40 above 40°	30@10° to 40°	20 below 10°	140A	90A	140A	90A	140A	140A	C
W-703-D	40 above 60°	30@32° to 60°	20 below 32°	140A	90A	140A	90A	140A	140A	C
W-906, 906R, W-1600-CD, W-2208, W-2209	30 above 80°	20@20° to 80°	10 below 20°	140A	90A	140A	90A	140A	140A	C
W-2200, W-2201, W-2204, W-2205, W-1600-BG, W-1600-BD	40 above 90°	30@32° to 90°	20 below 32°	140A	90A	140A	90A	140A	140A	C
W-2206	30 above 32°	20 below 32°		140A	90A	140A	90A	140A	140A	C

A—Straight mineral oil gear lubricant; same for front axle, aux. trans & transfer case.
 C—Light weight chassis lubricant.

Hyp—Hypoid gear lubricant front and rear axles, W-212 & W-312 only.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
E-19	8	6	9a	17½	
E-21	8	6	13b	20	
E-22	8	12	23d	20	
E-226	8	12	22e	20	
E-23	8	20	23f	28	
E-236	8	20	14e	28	
30, 31	14	15	38h	47	
316	14	15	32e	47	

a—Quantity shown is for single reduction spiral; with hypoid, 13 pt.; with two-speed, 15 pt.
b—Quantity shown is for single speed; two-speed, 15 pt.
d—Quantity shown is for single reduction; double reduction, 31 pt.
e—Each axle (tandem).
f—Quantity shown is for single speed; two-speed, 29 pt.
h—Quantity shown is for single speed; two-speed, 39 pt.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
E-19, E-21, E-22, E-226	136	17	Pos
E-23, E-236	153	19	Pos
30, 31, 316	153*	19	Pos

*—2 Batteries.

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
E-19	83-100	67-75	70-75
E-21, E-22, E-226	100-105	85-90	65-70
All Others	See Continental, page 92		

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before	Spark Occurs Fly-Wheel Teeth °TC B-Before	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
E-19	Own GC245	6-3½"x4¼"	40	5°B	.....	.012	.008	.010	CH	J11	14mm	.025	A	8°B	3B	105
E-21	Own OA292	6-3½"x4¼"	45-50	5°B	.....	.019	.015	.015	CH	J6	14mm	.025	A	4°B	.....	120
E-22	Own OA331	6-4½"x4½"	45-50	5°B	.....	.019	.015	.015	CH	J6	14mm	.025	A	2°B	.....	120
E-23	Cont T6427	6-4½"x4½"	40-60	16°B	.....	.022	.017	.017	CH	8COM	18mm	.030	A	6°B	.....	110
E-226	Own OA331	6-4½"x4½"	45-50	5°B	.....	.019	.015	.015	CH	J6	14mm	.025	A	2°B	.....	120
E-236	Cont T6427	6-4½"x4½"	40-60	16°B	.....	.022	.017	.017	CH	8COM	18mm	.030	A	6°B	.....	110
30	Cont R6513	6-4½"x5½"	40-60	12°B	.....	.022	.020	.020	CH	8COM	18mm	.030	A	6°B	.....	105
31	Con R6602	6-4½"x5½"	40-60	12°B	.....	.022	.020	.020	CH	8COM	18mm	.030	A	6°B	.....	105
316	Con R6602	6-4½"x5½"	40-60	12°B	.....	.022	.020	.020	CH	8COM	18mm	.030	A	6°B	.....	105

A—.018 to .024.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
E-19	140	2 7/8	54	2 5/8
E-21, E-22, E-226	154	1 3/4	62	1 3/8
All Other Models*	*—See Continental page 92.			

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
E-19, E-21, E-22, E-226	1/8-1/4	1	2	8
E-23, E-236	1/8-1/4	1	1 1/2	8
30, 31, 316	1/8-1/4	1	2	8

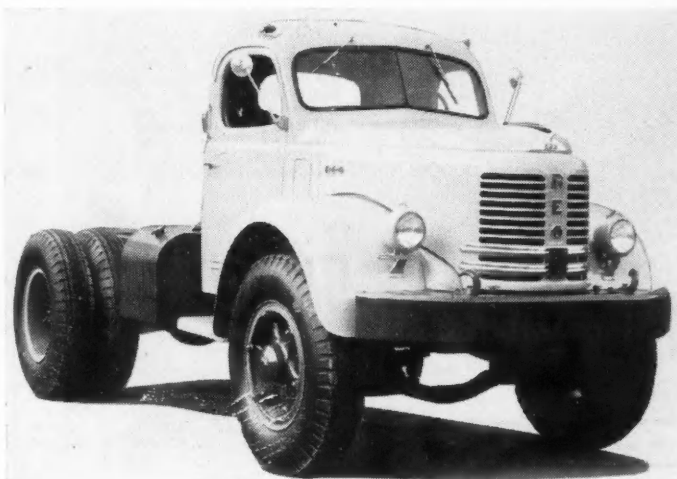
LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
E-19, E-21, E-22, E-226	30 above 32°	20W above 10°	10W below 10°	50HGL	50HGL	140	90	90	90	90
E-23, E-236, 30, 31, 316, E-236	30 above 50°	20 above 32°	10 below 20°	50HGL	50HGL	140	90	90	90	90

HGL—Heavy Gear Lubricant.

MAINTENANCE DATA

REO



Series E-19, E-21, E-22, E-23, E-226,
E-236, 30, 31, 316

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

STERLING



Series DD, HBS, HC, HCS, HD, HDS, HWS

If optional engine used, see pages 92 to 95.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
HD97, HD105, HA1401, DD115, HD115, HD145, HC97, HC105, HC115, HC144, HC147, HC155, HBS130, HDS140, HWS160, HA2205, DDS160, HCS195, HWS235G, HC175, HC250, DD145, HWS235, HCS265, HCS297, HCS330, HD115H, DD145H, HD145H, HC175H, HC250H, HWS160H, HWS235H, HCS195H, HCS265H, HCS297H, HCS330H	170 170 204	23 23 25	Pos Pos Pos
—Two Batteries.	170	21	Pos

TENSIONS

ENGINE MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
Wau 6MZA.....	73-75	95-100	67-69
Wau 6SRKR.....	73-75	129-133	121-125
Wau 140GK.....	130-134	130-134	121-125
Wau 145GK.....	130-134	242-250	73-75
Cum Diesels.....			

See Cummins—page 92

CAPACITIES

MODEL	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
HD97.....	8	16	31	34*	
HD105.....	8	16	30	34*	
HA1401.....	8	16	16	34*	
DD115.....	10	24a	16b	36*	
HD115.....	10	24	38	36*	
DD145.....	18	17g	16b	36*	
HD145.....	10	24	24	36*	
HD115H.....	20	17	16b	55*	
DD145H.....	20	17g	16b	55*	
HD145H.....	20	17	24	55*	
HC97.....	8	16	12c	34*	
HC105.....	8	16d	13c	34*	
HC115, HC144, HC147.....	16	24d	12c	36*	
HC155.....	10	24d	20c	36*	
HC175, HC250.....	18	17d	20c	62*	
HC115H.....	20	17e	20c	55*	
HC175H, HC250H.....	20	17e	20c	55*	
HBS130.....	8	18	22f	34*	
HDS140.....	8	18	14f	34*	
DDS160.....	10	24	14f	38*	
HWS160.....	10	24	14f	38*	
HA2205.....	10	24	14f	38*	
HWS235G.....	10	24	32f	55*	
HWS235.....	18	17	32f	62*	
HWS180H.....	20	17	17f	55*	
HWS235H.....	20	17	32f	55*	
HCS195.....	10	24e	24c	55*	
HCS265.....	18	17d	15h	62*	
HCS297, HCS330.....	18	17d	15h	62*	
HCS195H.....	20	17e	24c	55*	
HCS265H.....	20	17d	15h	55*	
HCS297H, HCS330H.....	20	17d	15h	55*	
HCS340H.....	28	21e	19h	62*	

*—Varies with optional radiator.
a—Transfer Case—4 Pts. c—Jackshaft Oil Capacity.
b—Capacity of Front Drive- ing Axle—24 Pts. d—Auxiliary Trans.—12 Pts.
e—Auxiliary Trans.—17 Pts. f—For Each Axle. g—Transfer Case—6 Pts. h—Pounds.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG	Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Fly- Wheel Teeth B-Before A-After	Comp. Pressure at Cranking Speed
HD97, HD105, HA1401, HC97, HC105, HBS130, HDS140	Wau 6MZA	6-4 1/4 x 4 3/4	40-1500	8°B	3B	.008-.008-10C .018-21C	AL BT4 18mm	.025 .018	Var	.....	110
DD115, HD115, HD145, HC115, HC144, HC147, HC115, HWS160	Wau 6SRKR	6-4 5/8 x 5 1/2	40-1500	8°A	3A	.004-.008-10C .024-26C	AL TT8 3/8	.025 .018	Var	.....	90
HCS195, HA2205, HWS235G, DDS160, HC175, HC250, HWS235, DD145, HCS265, HCS297, HCS330	Wau 140GK	6-4 1/2 x 5 1/2	40-1500	5°A	1 1/2 A	.010-.010-12C .016-18C	AL BT4 18mm	.025 .018	Var	.....	130
HD115H, DD145H, HD145H, HC115H, HC175H, HC250H, HWS160H, HWS235H, HCS195H, HCS265H, HCS297H, HCS330H	Wau 145GK	6-5 1/4 x 6	40-1500	5°A	2A	.006-.009-11C .024-26C	AL BT4 18mm	.025 .018	Var	.....	130
Cum HB800	Cum HB800	6-4 7/8 x 6	30-40-1800	5°B		.014 .022	Diesel Diesel				525
Cum NHBD600	Cum NHBD600	6-5 1/2 x 6	40-2100	20°B		.014 .027					525

VALVE SPRINGS

ENGINE MODEL	Valve Open Pressure (Ave.) Pounds	Length Inches	Valve Closed Pressure (Ave.) Pounds	Length Inches
6MZA.....	101	1 1/2	64	2 1/2
6SRKR.....	101	2 1/2	66	2 1/2
140GK.....	86	1 1/2	31	2 1/2
145GK.....	55	1 1/2	25	1 1/2
HB800.....	118	2 1/2	48	2 1/2
NHBD600.....	129-143	2 1/2	83-91	2 1/2
	104-114	1 1/2	74-82	2 1/4

I—Inner. O—Outer.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
HD97, HD105, HC97, HA1401, HC105, HBS130, HDS140, HD115, HD145, HD115H, HD145H, HC115, HC144, HC147, HC155, HC115H, HWS160, HWS160H, HCS195, HCS195H, HA2205	1/8 ± 1/8	1	Var	8
DD115, DDS160, DD145H, DD145, HC175, HC250, HC175H, HC250H, HWS235, HWS235H, HCS265, HCS297, HCS330, HCS265H, HCS297H, HCS330H, HWS235G, HCS340H	3/8 ± 1/8	0	Var	8
	3/8 ± 1/8	1	Var	8

LUBRICATION

LUBRICATION	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
HD97, HD105, HD115.....	40 50°-70°*	30 30°-50°	20W Below 30°	140	90	140Hyp	90Hyp	140	90	140
DD115, HA1401, HD145, DD145.....	40 50°-70°*	30 30°-50°	20W Below 30°	140	90	140	90	140	90	140
HD115H.....	20 20°-80°**	10 Below 20°		140	90	140Hyp	90Hyp	140	90	140
DD145H, HC175H, HC250H, HWS235H.....	20 20°-80°**	10 Below 20°		140	90	140	90	140EP	140EP	140
HD145H, HC115H, HWS160H, HCS195H.....	20 20°-80°**	10 Below 20°		140	90	140	90	140	90	140
HC97, HC105, HC115, HC144, HC147, HC155, HBS130, HDS140...	40 50°-70°*	30 30°-50°	20W Below 30°	140	90	140	90	140	90	140
HWS160, DDS160, HA2205, HCS195, HC175, HC250, HWS235, HWS235G.....	40 50°-70°*	30 30°-50°	20W Below 30°	140	90	140	90	140EP	140EP	140
HCS265, HCS297, HCS330.....	40 50°-70°*	30 30°-50°	20W Below 30°	140	90	(SS)	(SS)	140EP	140EP	140
HCS265H, HCS297H, HCS330H, HCS340H.....	20 20°-80°**	10 Below 20°		140	90	(SS)	(SS)	140EP	140EP	140
(\$\$)—Special Sterling Lubricant.	Hyp—Hypoid gear lube.	EP—Extreme pressure lube.		*50 above 70°.		**30 above 80°.				

(SS)—Special Sterling Lubricant.

Hyp—Hypoid gear lube.

EP—Extreme pressure lube.

*50 above 70°.

**30 above 80°.

CAPACITIES

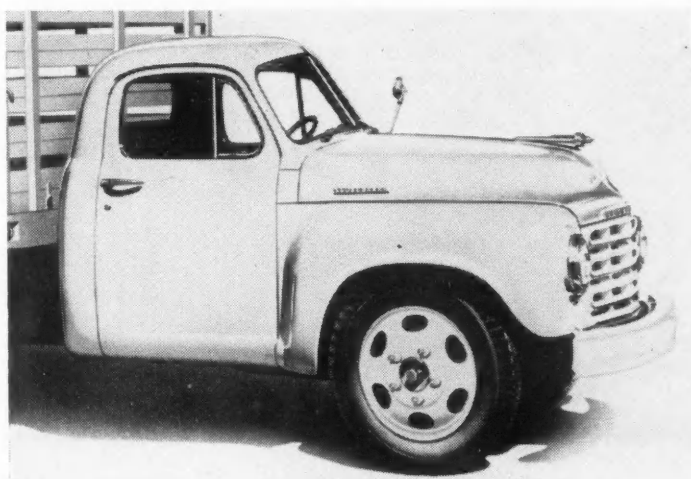
MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
2R5.....	6	2½ ^a	3	10 ^c	
2R10.....	6	2½ ^a	3	10 ^c	
2R15.....	6	6	6½	10 ^c	
2R16A.....	6	6	7b	15½ ^d	
2R17A.....	6	6½	18½ ^b	15½ ^d	

a—With overdrive - 3 pt.
With 4-speed trans. - 6 pt.
b—With 2-speed axle 14 pt.

c—13½ qt. optional
d—16 qt. optional

MAINTENANCE DATA

STUDEBAKER



BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Models*	100	15	Pos

*—Optional battery 153-19 Pos.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
2R5, 2R10, 2R15, 2R16A, 2R17A...	46-50 80-85	88-93 88-93	28-32 52-54

Models 2R5, 2R10, 2R15, 2R16A, 2R17A

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
2R5, 2R10...	Own 1R	6-3x4	40	15°B	5B	.020	.016C	.016C	CH	J7	14mm	.025	2°B	½B	120
2R15...	Own 2R	6-3x4	40	15°B	5B	.020	.016C	.016C	CH	J7	14mm	.025	2°B	½B	120
2R16A, 2R17A...	Own 4R	6-3½x4½	40	15°B	5½B	.020	.016C	.016C	CH	J7	14mm	.025	2°B	½B	120

C—Cold.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
2R5, 2R10, 2R15...	93-103	1⅞	37-41	1¾
2R16A, 2R17A...	125-135	1¾	54-60	2⅜

FRONT END

MODEL	TOE-IN (Inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
2R5, 2R10...	⅞-1¼	1	1¼-1¾	7¼
2R15...	⅞-1¼	1	1¼-2¼	8
2R16A, 2R17A...	⅞-1¼	1	2-2½	8

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNIVERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
2R5.....	30 above 32°	20 at 10° to 32°	10 below 10°	90g	90g	90Hyp	90Hyp	J	J	K
2R10.....	30 above 32°	20 at 10° to 32°	10 below 10°	90g	90g	140	90h	J	J	K
2R15.....	30 above 32°	20 at 10° to 32°	10 below 10°	140	90h	140	90h	J	J	K
2R16A (L).....	30 above 32°	20 at 10° to 32°	10 below 10°	140	90h	140	90h	J	J	K
2R17A (L).....	30 above 32°	20 at 10° to 32°	10 below 10°	140	90h	140Hyp	90Hyp	J	J	K

g—If equipped with overdrive use 90 mineral gear lube or 40 engine oil. h—Below 32° only.
J—Special lubes approved by Ross Tool & Gear Co. K—Chassis lube—low pressure gun.

Hyp—Truck type hypoid lube.
L—2-speed rear axle (optional) 90 hyp. below 32° and 140 hyp. above 32°

WALTER



Models FGB, FGR, FC, FCK, FKM, FN, FZM

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY			
	Engine Quarts	Transmission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
FGB, FGR (1943-50)	18	32	8	50
FC, FCK (1936-50)	10	25	6	42
FKM (1936-50)	10	17	6	36
FM-FZM (1936-50)	8	17	6	32

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
FN, FZM (1943-50)	160	17	Pos
FC, FCK, FKM (12 Volts) (1943-50)	120	15	Pos
FGB, FGR (12 Volts) (1943-50)	160	17	Pos

TENSIONS

MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds-feet)
FN, FZM	73-75	96-100	67-69
FKM, FCK, FC, FCR	73-75	129-133	121-125
FGB, FGR	130-134	242-250	73-75

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Intake Exhaust	Make	Type	Size	Gap				
FN, FZM (1943-50)	Wau MZR	6-4 1/2 x 4 3/4	40-1500	8°A	3A	.004	.008-10C .014-16C	Opt	.....	18mm	.025	.018	Var	.....	90
FKM, FCK, FC, FCR (1943-50)	Wau SRKR	6-7 1/2 x 5 3/8	40-1500	8°A	3A	.004	.008-10C .014-16C	Opt	.....	18mm	.025	.018	Var	.....	90
FGB, FGR (1943-50)	Wau 145GK	6-5 1/4 x 6	40-1500	5°A	2A	.006	.009-11C .024-26C	Opt	.....	18mm	.025	.018	Var	.....	130

C—Cold.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
FN, FZM	101	1 1/2	64	2 1/2
FKM, FCK, FC, FCR	94	2 1/2	59	2 1/2
FGB, FGR	158	2 3/4	67	2 1/2
	100	2 7/8	42	2 1/2

I—Inner. O—Outer.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
FN, FKM, FZM, FCK, FC, FGB, FGR (1936-50)	N 1/8	1 1/2	5	2

N—Negative.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
All models (1936-50)	(S) 50	(W) 30	.....	250	140	250	140	140	140	90

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
D-1.....	8a	16c	31e	36	36
D-1C.....	8a	16	38	36	36
D-2K, D-2Z.....	10a	24c	38ef	61	61
D-3, D-3S.....	14b	24c	38ef	80	80
D-5.....	20	24d	38e	58	58
D-5N, D-5R, D-5S.....	28	24d	38e	56	56

†—Add 2 qts. for heater.
a—Add 1 qt. for filter.
b—Add 4 qts. for filter.
c—Models with tandem axles, aux. trans.—13 pts.
d—Models with tandem axles, aux. trans.—12 pts.
e—Other models ending in T2, T4, T7, T8, use 14, 17, 32, and 26 pts. in each axle respectively.
f—Other models ending in F, G, and H, use 38, 34 and 38 pts. in each axle respectively.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Gasoline Models.....	152*	19	Pos
All Diesel Models.....	152**	19	Pos

*—2 Batteries. **—4 Batteries.

TENSIONS

MODEL	Cylinder Head (pounds/foot)	Main Bearings (pounds/foot)	Connecting Rod Bearings (pounds/foot)
All Models.....	See Engines, Pages 92-95		

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Intake	Exhaust	Make	Type	Size	Gap				
D1, D1C.....	Con T-6427	6-4 1/4 x 4 1/8	40-60	16°B	.....	.022	.017	.017	.017	CH	.....	.....	.025	.....	.....	.....	.....
D2K, D2.....	Wau 140-GK	6-4 1/2 x 5 1/2	40-1500	5°A	.....	.010	.010	.0135	.0135	CH	.....	.....	.025	.018	TC	.....	130
D2Z.....	Wau 140GZ	6-4 1/2 x 5 1/2	40-1500	5°A	.....	.010	.010	.0135	.0135	CH	.....	.....	.025	.018	TC	.....	130
D3.....	Con R-8572	6-4 1/2 x 5 1/2	50-60	12°B	.....	.0245	.020	.020	.020	CH	.....	.....	.025	.020	5B	.....	120
D3S.....	Con R-8602	6-4 1/2 x 5 1/2	50-60	12°B	.....	.0245	.020	.020	.020	CH	.....	.....	.025	.020	5B	.....	120
D5.....	Cum HB600	6-4 1/2 x 6	30-50	5°B	.....	.....	.014	.022	.....	Diese I	.....	.....	.....	.....	.....	.....	.....
D5N.....	Cum NHB-600	6-5 1/2 x 6	30-50	20°B	.....	.....	.014	.027	.....	Diese I	.....	.....	.....	.....	.....	.....	.....
D5R.....	Cum HRB-600	6-5 1/2 x 6	.....	5°B	.....	.....	.014	.022	.....	Diese I	.....	.....	.....	.....	.....	.....	.....
D5S.....	Cum HBS-600	6-4 1/2 x 6	.....	77°B	.....	.....	.018	.028	.....	Diese I	.....	.....	.....	.....	.....	.....	.....

VALVE SPRINGS

ENGINE MODEL	Valve Open		Valve Closed	
	Pressure (Avg.) Pounds	Length Inches	Pressure (Avg.) Pounds	Length Inches
Con T-6427.....	I. 57 O. 129	1.458	12.8	1 1/4
Con R8572, R8602.....	I. 85 O. 165	1 1/4	35	2 1/4
Wau 140GK.....	I. 55 O. 88	1 1/4	26	2 1/4
Wau 140GZ.....	I. 55 O. 88	1 1/4	26	2 1/4
Cum HB600, HRB-600, HBS-600.....	I. 129 O. 143	2 1/4	83	2 1/4
Cum NHB600.....	I. 104 O. 114	1 1/4	74	2 1/4

I—Inner. O—Outer.

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
All Gasoline Models.....	(S) 40	(W) 20 or 10	140	90	140	90	140	140	.....
All Diesel Models.....	30 at 80°-100°	20 at 20°-80°	140	90	140	90	140	140	.....

MAINTENANCE DATA

WARD LaFRANCE



Series D-1, D-1C, D-2K, D-2Z, D-3, D-3S, D-5, D5N, D5R, D5S

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

FRONT END

MODEL	TOE-IN (inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
All Models.....	1/8 ± 1/8	1/4-1 1/2	1/2-1 1/2	8

WHITE



Series WC14, WC16, WC18, WC20, WC22, WC26, WC28, WC32 & Models 3016, 3018, 3020, 3022, 3026

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
WC14, WC16, WC18, WC20, WC22, WC26, WC28, WC32	12	6	16	32	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	12	6	22	30	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	12	13	22	30	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	12	13	11	30	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	12	13	11	30	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	12	16	22	30	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	12	16	8	30	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	15	24	22	38	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	12	16	22	EA 30	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	15	24	14	EA 38	
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	15	24	26	EA 38	
3016	10	6	22	28	
3016T	10	13	22	28	
3018	10	11	11	28	
3018T, 3020, 3020T	10	13	11	28	
3022, 3022T, 3026	10	16	22	29	
3022PLT	10	16	8	29	

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
WC14, WC16, WC18, WC20, WC22, WC26, WC28, WC32	119	15	Pos
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	136	17	Pos
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	119*	15	Pos
WC16T, WC18T, WC20T, WC22T, WC26T, WC28T, WC32T	136*	17	Pos

*—2 Batteries.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds feet)	Main Bearings (pounds feet)	Connecting Rod Bearings (pounds feet)
110A, 116A, 120A, 130A, 140A	85-90	70-75	40-65
150A	85-90	70-75	48-52
260A, 280A	105-110	70-75	70-75

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
WC14	Own 110A	6-3 1/4 x 4 1/2	35 Max	15°B	0	0	0	0	Ch	J6	14mm	.025	D	7°B		
WC16, WC16B, 3016	Own 116A	6-3 1/4 x 4 1/2	35 Max	15°B	0	0	0	0	Ch	J6	14mm	.025	D	7°B		
WC16T, WC18, WC18B, 3016T, 3018	Own 120A	6-3 1/4 x 4 1/2	35 Max	15°B	0	0	0	0	Ch	J6	14mm	.025	D	6°B		
WC18T, WC20, WC20B, 3020, 3018T	Own 130A	6-4 x 4 1/2	35 Max	15°B	0	0	0	0	Ch	J6	14mm	.025	D	6°B		
WC20T, WC22, 3020T, 3022	Own 140A	6-3 1/4 x 5 1/4	35 Max	15°B	0	0	0	0	Ch	J6	14mm	.025	D	7°B		
WC20ST, WC22T, WC26, WC26T, 3022T, 3026, WC26A, WC22PLT, 3022PLT	Own 150A	6-4 x 5 1/4	35 Max	15°B	0	0	0	0	Ch	J6	14mm	.025	D	3°B		
WC28	Own 260A	6-4 1/2 x 5	45 Max	15°B	0	0	0	0	Ch	6 COM	18mm	.025	mm	9°B		
WC28T, WC32, WC28A, WC32A	Own 280A	6-4 1/2 x 5	45 Max	15°B	0	0	0	0	Ch	6 COM	18mm	.025	mm	9°B		

D—.017 to .018, E—.018 to .024.

VALVE SPRINGS

ENGINE MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
110A, 116A, 120A, 130A, 140A, 150A, 260A, 280A	99-107	2 1/2	Free	3.0
	74-81	1.827	Free	2 5/8
	109-117	1.827	Free	2 1/2

O—Outer, I—Inner.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
WC14, WC16, WC16T, WC18, WC18B, WC18T, WC20, WC20B, WC20T, WC20ST, WC16B, WC22PLT	1/8	1°	2°-50"	8°
WC22, WC22T, WC26, WC26T, WC28, WC28T, WC32, WC26A, WC28A, WC32A	1/8	1°	2°-50"	8°-30"
3016, 3018, 3020, 3016T, 3018T, 3020T, 3022, 3022T, 3022PLT, 3026	1/8	1°	2°-30"	6°

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
WC14, WC16, WC16B, WC16T, 3016, 3016T	(S)30	(W)20	90	90	140EP	90EP			
All other Models	(S)30	(W)20	90	90	140	90			

Note: EP—Extreme pressure lubricant. (S)—Summer, (W)—Winter.

CROSLEY

MAINTENANCE DATA

WILLYS



Pick Up, Panel Delivery



Models CJ-3A, 4WD, 473 Series

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
WILLYS All Models.....	100	15	Neg
CROSLEY All Models.....	70	11	Pos

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
WILLYS All Models.....	60-65	65-70	35-40
CROSLEY All Models.....	None	12.5-15	16.5-23

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
WILLYS CJ-3A.....	4	3*	2 3/4**	11	
4WD.....	4	3*	2 3/4**	11	
473 Series.....	4	1 1/4	12	11	
CROSLEY All Models.....	2	1	1 1/2	4	

*—Transfer case, 3 1/2 pts.
**—Front axle, 2 1/2 pts.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
WILLYS CJ-3A.....	Own L	4-3 1/2 x 4 3/8	35-30	9°B	2.4B	.020	.016C	.016C	AL*	AN-7*	14mm .030	.020	5°B	1.3B	115
4WD, 473 series.....	Own F	4-3 1/2 x 4 3/8	35-30	9°B	2.4B	.026	.018C	.016C	AL*	AN-7*	14mm .030	.020	TC	TC	120
CROSLEY All Models.....	Own	4-2 1/2 x 2 1/4	40-30	5°B	1	.006	.004-6C	.007-9C	AL	AN-7E	14mm .025	.020	12B	3B	130

*—OR Champion J-9, C—Cold.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
WILLYS CJ-3A intake, all exhaust.....	116	1 3/4	50	2 7/8
4WD, 473 Series Intake.....	160	1 3/8	73	1 3/4
CROSLEY All Models—Intake.....	51 max.	1 3/32	30 max.	1 1/2

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
WILLYS CJ-3A, 4WD.....	3/4-3/8	1 1/2	3	7 1/2
473 Panel.....	1 1/4-1 1/8	1	1	5
473 HT.....	3/4-3/8	1	4 1/4	7 1/2
CROSLEY All Models.....	1/8	2	7 1/2	6 1/2

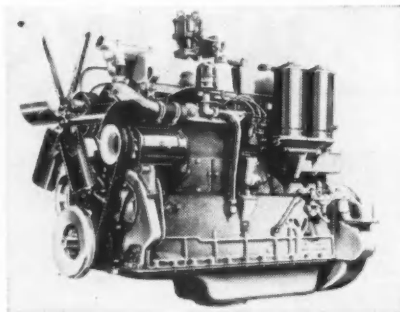
LUBRICATION

LUBRICATION MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
WILLYS All Models	30 above 90°	20@32° to 90°	20W@10° to 32°*	90A	80A	90B	90B	140	140	C
CROSLEY All Models	30 above 65°	20@10° to 65°	10 under 10°	90	90	90	90	90	90	.....

*—10W @ —10° to 10°, 10% kerosene below —10°
A—Same for transfer case or overdrive.
B—Same for front axles on 4WD models.

C—Front axle shaft U-joint: fibre grease or NLGI #0 winter, NLGI #1 summer. Propeller shaft U-joint: NLGI #0 winter, NLGI #1 summer. Rear prop. shaft on 4WD lubricated for life.

CONTINENTAL



Series F, M, B, T, R, U, S, TD, RD

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
B6371, B6427	102-110	1.521	53-59	1 1/4
F6186, F6226	101	1 1/4	11.3-14.3	1 1/4
F6188, F6209	98-104	1 1/4	42.5-47.5	1 1/4
M6271, M6290, M6330	111-118	1.521	53-59	1 1/4
R6513, R6572, R6802, RD6572	160-170	1 1/4	67-73	2 1/4
T6371, T6427, TD6427	82-88	1 1/4	33-37	2 1/4
S6749	129	1.458	71	1 1/4
	57	1 1/4	12.8	1 1/4
	200	2 1/4	90	2 1/4
	100	2 1/4	45	2 1/4

I—Inner. O—Outer.

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models	3/8" 35-40 1/2" 70-75 1 1/2" 90-100 1 3/8" 130-140 1 1/2" 145-155	1/8" 20-25 3/8" 35-40 1/2" 70-75 1 1/2" 85-95 1 3/8" 100-110	

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
F6186		6-3x4 1/2	35-40	TC		.014	.014A			18mm	.025				115
F6209		6-3 1/2 x 4 1/2	35-40	TC		.014	.014			18mm	.025				115
F6226		6-3 1/2 x 4 1/2	30-40	TC		.014	.014			18mm	.025				115
M6271		6-3 1/2 x 4 1/2	40-50	6 1/2" B		.017	.020			18mm	.025				115
M6290		6-3 1/2 x 4 1/2	40-50	6 1/2" B		.017	.020			18mm	.025				115
M6330		6-4x4 1/2	40-50	6 1/2" B		.017	.020			18mm	.025				115
B6371		6-4 1/2 x 4 1/2	40-50	6 1/2" B		.017	.022			18mm	.025				115
T6371		6-4 1/2 x 4 1/2	40-50	6 1/2" B		.017	.022			18mm	.025				115
B6427		6-4 1/2 x 4 1/2	40-50	6 1/2" B		.017	.022			18mm	.025				115
T6427		6-4 1/2 x 4 1/2	40-60	6 1/2" B		.017	.022			18mm	.025				115
U6501		6-4 1/2 x 5 1/2	40-50	17" B		.020	.024			18mm	.025				120
R6513		6-4 1/2 x 5 1/2	50-60	12" B		.020	.024			18mm	.025				120
R6572		6-4 1/2 x 5 1/2	50-60	12" B		.020	.024			18mm	.025				120
R6802		6-4 1/2 x 5 1/2	50-60	12" B		.020	.024			18mm	.025				120
S6749		6-5 1/2 x 5 1/2	40-60	12" B		.020	.024			18mm	.025				120
TD6427		6-4 1/2 x 4 1/2	40-60	12" B		.017	.017			Die sel					
RD6572		6-5 1/2 x 5 1/2	40-60	12" B		.020	.020			Die sel					

A—With Roto Valve, .010; B—With Roto Valve, .016; D—With Roto Valve, .018.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
AA-600	108-118	2	66-72	2 1/4
HB-400, HB-600, HBS-600, HRB-600, HRBS-600	129-143	2 1/4	83-91	2 1/4
NHB-600, NHBS-600, NHRBS-600, NVH-1200, NVHS-1200	104-114	1 1/4	74-82	2 1/4

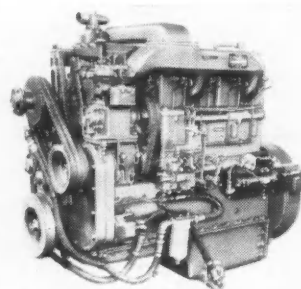
TENSIONS

Engine	Part	Step 1	Step 2	Step 3	Step 4
		Initial Tighten	Release Tension	"Snug" Tighten	Final Tighten
AA-600	Main Bearings	160 lb-ft	Loosen Completely	30 lb-ft	60 deg
	Connecting Rod Bearings				40-45 lb-ft
HB, HBS, HRB, HRBS	Main Bearings	320 lb-ft	Loosen Completely	50 lb-ft	50 deg
NHB, NHBS, NHRBS	Connecting Rod Bearings	140 lb-ft	Loosen Completely	40 lb-ft	60 deg
NVH, NVHS	Main Bearings	350 lb-ft	Loosen Completely	50 lb-ft	60 deg
	Connecting Rod Bearings				140 lb-ft

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
AA-600		6-4x5		6" B		.015	.025			Die sel					525
HB-400		4-4 1/2 x 6		5" B		.014	.022			Die sel					525
HB-600		6-4 1/2 x 6		5" B		.014	.022			Die sel					525
HBS-600		6-4 1/2 x 6		7 1/2" B		.016	.028			Die sel					525
HRB-600		6-5 1/2 x 6		5" B		.014	.022			Die sel					525
HRBS-600		6-5 1/2 x 6		7 1/2" B		.016	.028			Die sel					525
NHB-600		6-5 1/2 x 6		20" B		.014	.027			Die sel					525
NHBS-600		6-5 1/2 x 6		7 1/2" B		.014	.021			Die sel					525
NHRBS-600		6-5 1/2 x 6		55" B		.014	.021			Die sel					525
NVH-1200		12-5 1/2 x 6		20" B		.014	.027			Die sel					525
NCHS-1200		12-5 1/2 x 6		7 1/2" B		.014	.027			Die sel					525

CUMMINS



4, 6 and 12 Cylinder Series

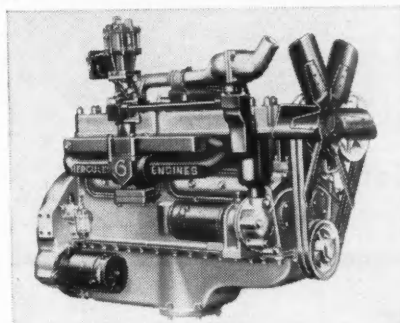
TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
ZX Series.....	35	77	25
IX Series.....	33	77	42
JX Series.....	75	*60	52
		**70	
QX Series.....	60	*60	39
		**70	
TDXB.....	70	*105	115
		**123	
DWXLD Series...	158	175	158
DFXH-F.....	350	260	263
WX Series.....	60	*70	105
		**105	†153
YX, RX Series...	75	*105	105
		**123	†115
RXL Series.....	80	175	158
			†123
HX Series.....	105	*193	263
		**210	
D1X6, D1X4D...	158	105a	95
		85b	
DOO Series.....	158	*77	140
		**95	
DWX Series.....	158	175	158
DJX Series.....	158	*77	140
		**95	
DRX Series.....	1/2"-175	175	158
	1"-280		
DFX Series.....	300	260	263

*—Center and rear.
†—Connecting rod 1/8 in.
‡—Connecting rod 1/4 in.
**—Front and intermediate.
†—Babbitt.
a—Front, center and rear.
b—Intermediate.

MAINTENANCE DATA

HERCULES



Series ZX, IX, QX, JX, WX,
YX, RX, HX and Diesels

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
ZX Series.....	35	8 1/2	22	1 1/4
IX Series.....	42	1 1/8	21	1 1/8
OO, JX Series...	58	1.594	43	1.920
QX Series.....	37-41	1 1/8	17-19	1 1/8
TDX, OX, WX, WXL, YX, RX, RXL Series	102	2 1/8	50	2 25/32
HX Series.....	84	3 3/4	47	3 3/4
	45	2 1/8	27	3 3/4
D1X6D, D1X4D...	49	1.2125	26	1.5625
	34	1.0875	16	1.4375
DOO, DJX Series...	55	1.406	31	1.781
	37	1.281	19	1.656
DWXL, DWX Series...	84	1 1/2	38	1 1/8
	74	1 1/2	28	1 1/2
DRX Series.....	48	1.449	27	1.844
	30	1.355	17	1.750
DFX Series (Except DFXH)...	94	2 1/8	55	3 1/8
	57	2 1/8	32	3 1/8
DFXH.....	124	1 1/2	63	2 1/8
	96	1 1/8	42	2 1/8

I—Inner, O—Outer.

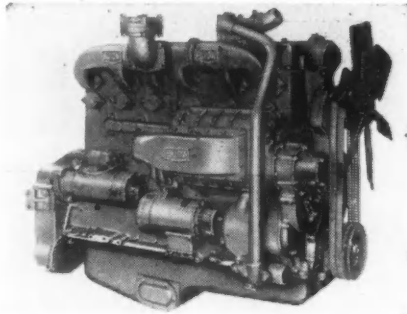
TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before	Spark Occurs Flywheel Teeth °TC B-Before	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
IX Series.....			15-1000	5°A	Var	.006	.006	.008		Opt		.025	.020	N	N	Opt
JXA, JXF, JX6, JXE3, JXB, JX6, JXD			26-1600	5°A	Var	.010	.008	.010		Opt		.025	.020	N	N	Opt
QXA, QXB, QXC, QXD			26-1600	5°B	Var	.006	.006	.008		Opt		.025	.020	N	N	Opt
WX Series.....			26-1600	2°A	Var	.010	.006	.006		Opt		.025	.020	N	N	Opt
ZX Series.....			15-1000	5°A	Var	.006	.006	.006		Opt		.025	.020	N	N	Opt
QXLD.....		6-3 1/2"x4 1/4"	26-1600	5°B	Var	.006	.010	.010		Opt		.025	.020	N	N	Opt
JX4-E.....		4-3 1/2"x4 1/4"	32-1600	5°B	Var	.010	.010	.010		Opt		.025	.020	N	N	Opt
JX4-C.....		4-3 1/2"x4 1/4"	32-1600	5°B	Var	.010	.010	.010		Opt		.025	.020	N	N	Opt
JX4-D.....		4-4x4 1/4"	32-1600	5°B	Var	.010	.010	.010		Opt		.025	.020	N	N	Opt
JXLD.....		6-4x4 1/2"	35-1600	5°B	Var	.010	.010	.016		Opt		.025	.020	N	N	Opt
RXB.....		6-4 1/2"x5 1/4"	26-1600	2°A	Var	.010	.010	.016		Opt		.025	.020	N	N	Opt
RXC.....		6-4 1/2"x5 1/4"	36-1600	2°A	Var	.010	.010	.016		Opt		.025	.020	N	N	Opt
TDXB.....		6-4 1/2"x5 1/4"	36-1600	5°B	Var	.010	.010	.016		Opt		.025	.020	N	N	Opt
RXLC.....		6-4 1/2"x5 1/4"	36-1600	2°A	Var	.010	.010	.016		Opt		.025	.020	N	N	Opt
RXLD.....		6-4 1/2"x5 1/4"	36-1600	2°A	Var	.010	.010	.016		Opt		.025	.020	N	N	Opt
RXLDH.....		6-4 1/2"x5 1/4"	36-1600	2°A	Var	.010	.010	.016		Opt		.025	.020	N	N	Opt
HXB.....		6-5x6	36-1600	5°B	Var	.015	.010	.016		Opt		.025	.020	N	N	Opt
HXC.....		6-5 1/2"x6	35-1600	5°B	Var	.015	.010	.016		Opt		.025	.020	N	N	Opt
HXD.....		6-5 1/2"x6	35-1600	5°B	Var	.015	.010	.016		Opt		.025	.020	N	N	Opt
HXE.....		6-5 1/2"x6	35-1600	5°B	Var	.015	.010	.016		Opt		.025	.020	N	N	Opt
DJXB.....		6-3 1/2"x4 1/2"	45-2000	12°B	Var	.010	.010	.010		Die sel						Opt
D1X4D.....		4-3 1/2"x4	45-2000	17 1/2°B	Var	.010	.010	.010		Die sel						Opt
D1X6D.....		6-3 1/2"x4	45-2000	17 1/2°B	Var	.010	.010	.010		Die sel						Opt
DJXC.....		6-3 1/2"x4 1/2"	45-2000	12°B	Var	.010	.010	.010		Die sel						Opt
DJXH-F.....		6-3 1/2"x4 1/2"	45-2000	12°B	Var	.010	.010	.010		Die sel						Opt
DOOB.....		4-3 1/2"x4 1/2"	30-1200	12°B	Var	.010	.010	.010		Die sel						Opt
DOOC.....		4-4x4 1/2"	30-1200	12°B	Var	.010	.010	.010		Die sel						Opt
DOOD.....		4-4 1/2"x4 1/2"	30-1200	12°B	Var	.010	.010	.010		Die sel						Opt
DWXL.....		6-4 1/2"x4 1/2"	40-1600	17 1/2°B	Var	.010	.010	.010		Die sel						Opt
DWXL-D.....		6-4 1/2"x5	40-1600	17 1/2°B	Var	.010	.010	.010		Die sel						Opt
DWXL-D-F.....		6-4 1/2"x5	40-1600	17 1/2°B	Var	.010	.016	.016		Die sel						Opt
DRXB.....		6-4 1/2"x5 1/4"	30-1200	12°B	Var	.016	.016	.016		Die sel						Opt
DRXC.....		6-4 1/2"x5 1/4"	30-1200	12°B	Var	.016	.016	.016		Die sel						Opt
DFXB.....		6-5x6	50-1200	5°B	Var	.015	.010	.016		Die sel						Opt
DFXC.....		6-5 1/2"x6	50-1200	5°B	Var	.015	.010	.016		Die sel						Opt
DFXD.....		6-5 1/2"x6	50-1200	5°B	Var	.015	.010	.016		Die sel						Opt
DFXE.....		6-5 1/2"x6	50-1200	5°B	Var	.015	.010	.016		Die sel						Opt
DFXH.....		6-5 1/2"x6	50-1200	5°B	Var	.015	.010	.016		Die sel						Opt
DFXH-F.....		6-5 1/2"x6	50-1200	19°B	Var	.014	.010	.016		Die sel						Opt

F—Horizontal type engine.

N—Varies with compression ratio.

BUDA



Series 6B, HP, K, L, LO, 6MO, 6BD, 6DT, 6DC, 8DC

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
K-428 (1936-50)	125-138	1 1/2	51-57	2 1/2
LO-825 (1938-50)	128-136	2 1/2	42-49	3 1/2
6MO-778 (1946-50)	145-155	2 1/2	62-68	2 1/2
6MO-893, 6MO-870 (1946-50)	145-155	2 1/2	62-68	2 1/2
6BD-273 (1946-50)	105-115	1 1/2	40-50	1 1/2
6DT-317 (1938-50)	84-89	1 1/2	35-40	2
6DT-468 (1938-50)	78-86	1 1/2	35-38	2 1/2
6DC-844 (1944-50)	144-155	2 1/2	62-68	2 1/2
6DCS-844 (1945-50)	144-155	2 1/2	62-68	2 1/2
8DC-1125, 8DCS-1125 (1945-50)	162-172	2 1/2	70-80	2 1/2

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
All Models	3/8"- 60-70 7/8"- 75-85 1"- 95-105 1 1/8"- 125-135 1 1/4"- 150-160	1 1/8"- 195-200 1 1/4"- 210-230 1 1/2"- 230-250 1 3/4"- 245-275 1 7/8"- 285-315 2"- 325-350	

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake	Exhaust	Make	Type	Size	Gap				
6B-230		6-3 1/2 x 4 1/2	35-1600	10°B		.008	.009	CH		14mm	.030	.018			
6B-273		6-3 1/2 x 4 1/2	35-1600	10°B		.008	.009	CH		14mm	.030	.018			
HP326		6-3 1/2 x 4 1/2	40 1400	TC		.006	.006	CH	15A	18mm	.030	.018			103
HP351		6-3 1/2 x 5 1/2	40 1400	TC		.006	.006	CH	15A	18mm	.030	.018			103
K428		6-4 1/2 x 4 1/2	40-1400	TC		.006	.006	CH	15A	18mm	.025	.018			102
L525		6-4 1/2 x 5 1/2	40-1600	TC		.006	.006	CH	15A	18mm	.025	.018			87
LO525		6-4 1/2 x 5 1/2	40-1500	10°B		.009	.009	CH	J10	18mm	.025	.018			93
6MO-778		6-5 1/2 x 6	35-1800	20°B		.015	.015	CH	6COM	18mm	.027	.018			125
6MO893		6-5 1/2 x 6	30-1200	10°B		.010	.015	CH	6COM	18mm	.027	.018			105
6MO970		6-5 1/2 x 6 1/2	35-1800	20°B		.015	.015	CH	6COM	18mm	.027	.018			125
6BD-230		6-3 1/2 x 4 1/2	35-1600	20°B		.008	.009		Die sel						
6BD-273		6-3 1/2 x 4 1/2	20-1800	20°B		.008	.009		Die sel						390
6DT-317		6-3 1/2 x 5 1/2	40-1600	12°B		.009	.009		Die sel						
6DT468		6-4 1/2 x 5 1/2	35-1600	20°B		.009	.010		Die sel						
6DC844		6-5 1/2 x 6	30-1200	45°B		.010	.015		Die sel						390
6DCS-844		6-5 1/2 x 6 1/2	30-1200	45°B		.010	.015		Die sel						
8DCS-1125		8-5 1/2 x 6 1/2	30-1200	20°B		.010	.015		Die sel						
8DC-1125		8-5 1/2 x 6 1/2	30-1200	20°B		.010	.015		Die sel						

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
190GL	71	1 1/2	48	1 1/2
195GKA	124 ± 10	1 1/2	46 ± 4	2 1/2
6BZ	110	1 1/2	61	2 1/2
6MZA	101	1 1/2	64	2 1/2
140GK	88	1 1/2	31	2 1/2
140GKB, 140GZB (Hi Output)	55	1 1/2	26	1 1/2
	127	1 1/2	67	2 1/2
6SRKR	70	1 1/2	30	1 1/2
145GK, 145GZ	101	2 1/2	66	2 1/2
	118	2 1/2	48	2 1/2
145GKB (Hi Output)	81	2 1/2	32	2 1/2
	158	2 1/2	67	2 1/2
190DLC	100	2 1/2	42	2 1/2
148DK	71 ± 6	1 1/2	48 ± 4	1 1/2
	118 ± 9	2 1/2	48 ± 4	2 1/2
6WAKD	81 ± 6	2 1/2	32 ± 3	2 1/2
	140 ± 10	2 1/2	50 ± 3	3 1/2
	139 ± 11	2 1/2	56 ± 4	3 1/2

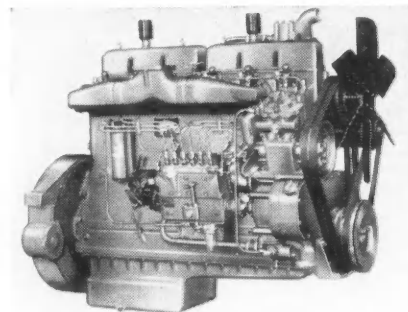
I—Inner, O—Outer.

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
190GL	81-83	109-113	46
6BZ	73-75	88-92	67-69
6MZA, 195GKA, 140GK, 140GKB, 140GZB	73-75	96-100	67-69
6SRKR	129-133	129-133	121-125
145GK, 145GKB, 145GZ	73-75	129-133	121-125
6WAK, 6WAKH	L200	242-250	73-75
190DLC	S175	242-250	86-88
148DK	148-150	108-112	45-50
	96-100	240-250	65-69
6WAKD	L240-250	240-250	90-95
	S170-190		
	L240-250		
	S170-190		

L—Long, S—Short.

WAUKESHA



Models 190GL, 195GKA, 6BZ, 6MZA, 6SRKR; 140, 145, 6WA Series and Diesels

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
190GL		6-3 1/2"x4	12-15*	8°B	3B	.010			Opt		18mm	.025	.018	Var	Var	112
6BZ		6-4x4 1/2	40-1500	8°B		.010	.010-12C	.014-16C	Opt		18mm	.025	.010	Var	Var	110
195GKA		6-4 1/2"x4	40*	18°B		.010	.010C	.014C	Opt		18mm	.025	.018	Var	Var	110
6MZA		6-4 1/2"x4 3/4	40-1500	8°B	3B	.008	.008-10C	.018-21C	Opt		18mm	.025	.018	Var	Var	110
140GK		6-4 1/2"x5 1/2	40*	15°B	5B		.012-14C	.018-20C	Opt		14 or 18	.025	.018	Var	Var	
140GKB (Hi Output)		6-4 1/2"x5 1/2	40*	15°B	5B		.012-14C	.024-26C	Opt		14 or 18	.025	.018	Var	Var	
6SRKR		6-4 3/4"x5 1/2	40-1500	8°A	3A	.004	.008-10C	.024-26C	Opt		7/8	.025	.018	Var	Var	90
140GZB (Hi Output)		6-4 3/4"x5 1/2	40*	15°B	5B		.012-14C	.024-26C	Opt		14 or 18	.025	.018	Var	Var	
145GK, 145GKB (Hi Output)		6-5 1/2"x6	40*	15°B	6B		.012-14C	.023-25C	Opt		14 or 18	.025	.018	Var	Var	
145GZ		6-5 1/2"x6	40*	15°B	6B		.015-17C	.021-23C	Opt		14 or 18	.025	.018	Var	Var	
6WAK, 6WAKH		6-6 1/2"x6 1/2	40-1500	TC	TC	.012	.018-20C	.025-27C	Opt		18mm	.025	.018	Var	Var	85†
190DLK		6-3 1/2"x4	15-1500	8°B		.010	.009-11C	.015-17C			Die sel					
148DK		6-5 1/2"x6	40-1500	10°B			.014-16C	.022-24C			Die sel					
6WAKD		6-6 1/2"x6 1/2	40-1300	TC	TC	.012	.013-15C	.023-25C			Die sel					480

*—At governed speeds.

C—Cold.

†6WAKH, 125 lb.

VALVE SPRINGS

MODEL		Valve Open		Valve Closed	
		Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
All Models	O. {	243	2.000	115	2.485
	I. {	243	1.941	115	2.423

4—Inner. O—Outer.

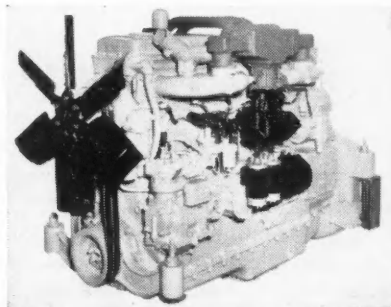
TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
All Models	L230-250 S30-40	180-200	130-140

L—Large.

S—Small.

HALL-SCOTT



Models 400, 470, 480, 180,
190, 136, and 504

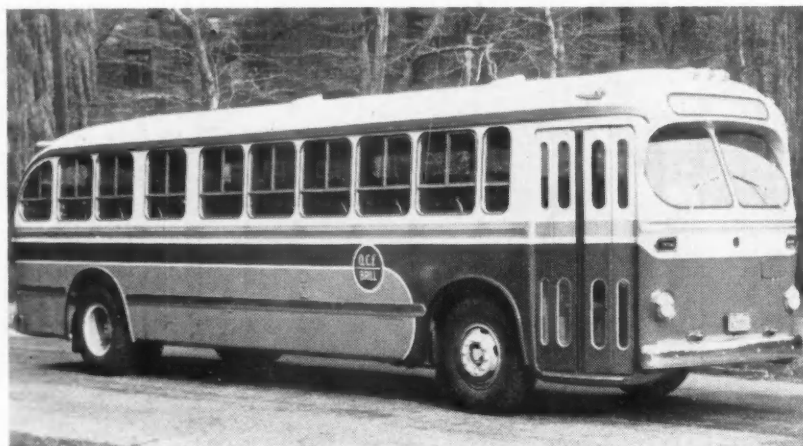
TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
470 Truck		6-5 1/2"x6	55-1600	10°B			.021	.031	CH	Note 1	18mm	.018	Note2	2°B		129
480 Truck		6-5 1/2"x6	55-1600	10°B			.021	.031	CH	Note 1	18mm	.018	Note2	2°B		129
400 Truck		6-5 1/2"x7	55-1600	10°B			.021	.031	CH	Note 1	18mm	.018	Note2	2°B		129
180 Bus*		6-5x6	60-2000	7°B			.021	.021	CH	Note 3	18mm	A	B	12°B		116
190 Bus*		6-5 1/2"x6	60-2000	7°B			.021	.021	CH	Note 3	18mm	A	B	12°B		114
136 Bus*		6-4 1/2"x5	55-2800	4°B			.023	.023	CH	No. 6	18mm	.018	B	TC		150
504 Bus*		6-4 3/4"x5	55-2800	10°B			.025	.025	CH	No. 6	18mm	.018	B	9°B		120

Note 1—Two per cyl. All exhaust, No. 6. Intake (Butane), No. 8
Note 3—2 per cyl., all No. 6.

Intake (Gasoline), No. 9. Note 2—Delco-Remy single and both Auto-Lite, .020. Delco-Remy dual, .015.
A—.018 intake side, .020 exhaust side. B—.018-.024. *—Horizontal in line.

ACF-BRILL



Models C-27, C-31, C-36, C-44, C-48, IC-37/41

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
C-36	16	9	21	56	
C-44 (HS 180-3, HS 190-3), IC-37/41	20	20	26	80	
C-27, C-31	12	8	13	32	
C-36*	16	7 1/4	21	80	
C-44*, C-48	20	14	26	80	

*—Torque converter.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Models	158	17	Pos

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
HS 136/477-2	30-40 120-130	130-140	70-80
HS 180-3, 190-3	30-40 210-220	180-200	130-140
IHC Red 361, 401, 450	105	105	80

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)			SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Intake	Exhaust	Make	Type	Size	Gap				
C-36	HS 136-477	6-4 1/2 x 5	60-2400	4°B	1 1/2"	.025	.025c	.025c	CH	6 COM	18mm	.025	.018	7.7B	1"	*
C-44	HS 180-3	6-5x6	80-2200	7°B	1"	.022	.022c	.022c	CH	6 COM	18mm	.025	.018	8.8B	1"	*
C-44, C-48, IC 37/41	HS 190-3	6-5 1/2 x 6	80-2200	7°B	1"	.022	.022c	.025c	CH	6 COM	18mm	.025	.018	10B	1 1/2"	*
C-27	IHC 361	6-4 1/2 x 4 1/2	40-45 @ 1500/1800	8°B		.023	.020	.020	CH	J-10	14mm	.030	.022	4B		110
C-31	IHC 401	6-4 1/2 x 5	40-45 @ 1500/1800	8°B		.023	.020	.020	CH	J-10	14mm	.030	.022	TC		115
C-31	IHC 450	6-4 3/8 x 5	40-45 @ 1500/1800	8°B		.023	.020	.020	CH	J-10	14mm	.030	.022	TC		122

HS—Hall-Scott.

* 100—105

C—Cold

VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
C-44 (HS 180-3)	243	2.000	115	2.485
C-36 (HS 136, 477)	243	1.941	115	2.423
C-44, C-48, IC 37/41 (HS 190-3) . I.				
C-27 (IHC Red 361)				
C-31 (IHC 401, 450)				

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
C-36	0-1/16	1	1 1/2	8
C-44, C-48, IC 37/41	0-1/16	1	1 1/2	8 1/2
C-27, C-31	0-1/16	1	1 1/2	8 1/2

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
C-36, C-44 (HS 180-3, 190-3), C-48, IC-37/41	a 32° to 90°	20 @ 32° to -10°	140	140	140	90	90	90	140
C-27, C-31	b 32° to 90°	20 @ 32° to 10°	140	140	140	90	90	90	140

a—SAE 30 light service, SAE 40 heavy service.

b—SAE 40 light service, SAE 50 heavy service.

AEROCOACH



Models 372-MC, MH, MD, T361

MAINTENANCE DATA

BEAVER



Models B35PT, B31PT, B27PT

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
AEROCOACH			
372-MC, 372-MH	165	21	Pos
372-MD*	165	21	Pos
T-361	158	17	Pos
BEAVER			
All Models	158	17	Pos

*—2 Batteries

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
AEROCOACH			
372-MC, T-361...	110		
372-MD	$\frac{5}{8}$ "-175	175	158
BEAVER			
IHC 450, 406, 372	110	105	80
IHC 269	80	105	80

CAPACITIES

MODEL	LUBRICANT CAPACITY					Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints		
AEROCOACH						
372-MC	12	10	12			80
372-MH	9	10	12			80
372-MD	14	10	12			80
T-361	12	7				80
BEAVER						
IHC 450	12	6	23			60
IHC 406, 372	12	6	20			60
IHC 269	8	6	20			50

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
AEROCOACH															
372-MC, T-361	Con U6501	6-4 $\frac{1}{2}$ x5 $\frac{1}{4}$	40-50	17°B		.0225	.020	.024	AC	82	18mm	.025	.021	5°B	120
372-MH	IHC 450	6-4 $\frac{1}{2}$ x5	40-1500	8°B		.023	.018	.020	AC	43	14mm	.030	.021	TC	122
372-MD	Her DRXC	6-4 $\frac{1}{2}$ x5 $\frac{1}{4}$	30-1200	12°B		.016	.016	.016							
BEAVER															
B35PT	IHC 450	6-4 $\frac{1}{2}$ x5	40-2600	8°		.023	F	F	AC	43	14mm	F	D	TC	122
B31PT	IHC 372	6-4 $\frac{1}{2}$ x4 $\frac{1}{2}$	40-2700	8°		.023	F	F	AC	43	14mm	F	D	TC	122
B31PT	IHC 401	6-4 $\frac{1}{2}$ x4 $\frac{1}{2}$	40-2700	8°		.023	F	F	AC	43	14mm	F	D	TC	122
B27PT	IHC 269	6-3 $\frac{1}{2}$ x4 $\frac{1}{2}$	40-2800	8°		.023	F	F	AC	43	14mm	F	D	3°B	115

F—.018-.020.

E—.028-.032.

D—.018-.024.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
AEROCOACH				
All Models		See engines page	93	
BEAVER				
B35PT, B31PT	222		92	
B27PT	116		69	

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
AEROCOACH				
372-MC, 372-MH, 372-MD	$\frac{1}{8}$	1°	1 $\frac{1}{2}$ °	8°
T-361	$\frac{1}{8}$	1°	1 $\frac{1}{2}$ °	8°
BEAVER				
All Models	$\frac{1}{8}$	1°	0 to 2°	8 $\frac{1}{2}$ °

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
AEROCOACH									
372-MC	(S)40	(W)30	50	50	140	90	250	140	140
372-MH	(S)50	(W)40	50	50	140	90	250	140	140
372-MD		Follow Visco meter	50	50	140	90	250	140	140
T-361	(S)40	(W)30	50	50	140 Hyp	90 Hyp	250	140	140
BEAVER									
B35PT, B31PT	(S)50	(W)40	140	90	140GP	90GP	140	90	90
B27PT	(S)40	(W)30	140	90	140GP	90GP	140	90	90

(S)—Summer.

(W)—Winter.

Hyp—Hypoid gear oil.

GP—General purpose gear lubricant.

BECK

CUB



Model Silverliner



Models 16-S, 19-T

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
Beck Silverliner.....	*	17	Pos
Cub Coach 16-S, 19-T.....	135	17	Pos

*—2 batteries.

TENSIONS

MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
Beck Silverliner.....	430-450	310-330	105-115
Cub Coach 16-S, 19-T.....	55-60	95-105	45-50

CAPACITIES

MODEL	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
Beck Silverliner.....	20	12	23	56
Cub Coach 16-S, 19-T.....	5	5	3	22

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
Beck Silverliner.....	Cum NHB600	6-5 $\frac{1}{2}$ x6	50-2000	20°B	.....	.015	.014	CH	H-9	Die sel	14mm	A	.025	TC	525
Cub Coach 16-S, 19-T.....	Ford-7MT	6-3.3x4.4	50-2000	11°B	.....	.009-.11c	.013-.15c	CH	H-9	Die sel	14mm	A	.025	TC	110

A—.025-.028. C—Cold.

VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
Beck—NHB 600	See	Cummin	s page 92	
Cub Coach 16-S, 19-T.....	116	1.75	50	2.109

FRONT END

MODEL	TOE-IN (In inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
Beck Silverliner.....	$\frac{1}{16}$	1°	3°	8°
Cub Coach 16-S, 19-T.....	0- $\frac{1}{16}$	$\frac{1}{4}$ to 1°	1-3 $\frac{1}{2}$	7 $\frac{1}{2}$ -8°

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
Beck Silverliner.....	(S)30	20@10° to 32°	140	90	140	90	90EP	90EP	140
Cub Coach 16-S, 19-T.....	30 above 32°	20W@10° to 32°	140	90	140EP	90EP	90EP	90EP	140

(S)—Summer. EP—Extreme pressure lube.

FITZJOHN

MAINTENANCE DATA

FLXIBLE



Models Cityliner, Duraliner,
Super Duraliner



Models B, CR, C, C-1

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
FITZJOHN Cityliner, Duraliner, Super Duraliner	150	21	P
FLXIBLE All Models	160	102	P

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
FITZJOHN Her JXLD	75	a	56
Wau. 140GKB	130	130	100
FLXIBLE B	65-70	90-100	60-65
CR, C, C-1	75-80	100-110	40-50

a—Front and intermediate 70, center and rear 60.

CAPACITIES

MODEL	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
FITZJOHN Cityliner, Duraliner, Super Duraliner	9	15	20	28	36
FLXIBLE B	16	5	20	28	56
CR, C	8	8	6	6	50
C-1	24*	23	23	23	94

*—Includes transfer case.

TUNE UP

TUNE UP																
MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
FITZJOHN																
Cityliner, Duraliner	Her JXLD	6-4x4 ¹ / ₂	26-1600	5°B		.011	.010	.010	CH	H0 COM	7/8	.025	.022	TC		
Super Duraliner	Wau 140GKB	6-4 ¹ / ₂ x5 ¹ / ₂	40-2600	15°B			A	B	CH	H-9	14mm	.025	.022	TC		
FLXIBLE																
B	Buick FB320	8-3 ⁷ / ₈ x4 ⁵ / ₈	35-35 mph	14°B		.015	.019	.019	AC	46	14mm	.025	.015	6°B		125
CR, C, C-1	Chev 235	6-3 ¹ / ₂ x3 ¹ / ₈	14-2000	1°B		.006	.010	.020	AC	104	14mm	.035	.020	5°B		110
A—.012—.014.	B—.024—.026.															

A—.012-.014. B—.024-.026.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
FITZJOHN HER JXLD WAU 140GKB	58	1.394	43	1.920
FLXIBLE Buick	51	1 1/8	20	1 1/8
Buick (hyd. valve lifters)	77	1 1/8	32	1 1/8
Chev. (235 cu.-in.)	52	1 1/8	24	1 1/8
	120	1 1/8	52	1 1/8
	Free length	2 1/4 in.		

Press. @ 1 1/2 in., 124-140 lb.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
FITZJOHN Cityliner, Duraliner, Super Duraliner	1/8	1	1 1/2	8
FLXIBLE B	1/8	1	2	8
CR, C	1/8	0-1	1 1/2	8
C-1	1/8	0-1	1 1/2	8

*—Under load not to exceed 0°.

**—1° flat spring full load no movement.

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
FITZJOHN Cityliner, Duraliner, Super Duraliner	(S)30 (S)30 (S)40	(W)30 (W)30 (W)40	140 140 140	90 90 90	140Hyp 140 140Hyp	90Hyp 90 90Hyp	140 140 140	140 140 140	140 140 140
FLXIBLE B, C-1, CR, C	(S)10* (S)10*	(W)10* (W)10*	50Mo 140Mo	50Mo 90Mo	C 140Mo	C 90Mo	50Mo 140Mo	50Mo 90Mo	E J

J—SAE 90 below 32°F, SAE 140 above 32°F.

C—High grade lubricant equivalent to U. S. Specification No. 2-105-B.

E—Viscous, adhesive, medium bodied, semi-fluid grease to withstand being washed away and to protect parts from road shock.

(S)—Summer. (W)—Winter. Hyp—Hypoid gear lube.

*—SAE 20 if oil consumption becomes excessive. Not heavier than 30.

MO—Straight mineral oil.

G. M. C.



Models TDH, TGH, PD, PDA

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Pints	
TGH 2708, 3101	9	26	9.25	20	
TDH 3209, 3612	17	58	20	42	
TDH 4010, 4509	25	58	20	50	
PD 4102	25	21	18	56	
PDA 3704	17	12	18	40	

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
TGH 2708, 3101	110	19	Pos
TDH 3209, 3612, 4010, 4509	117	17	Pos
PD 4102, PDA 3704	155	27	Pos

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
270	70-80	70-80	40-45
4-71, 6-71	165-175	155-185	65-75

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tapet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
TGH 2708, 3101	GMC 270	6-3 $\frac{1}{2}$ x4	40-3200a	4°B	.....	.012	.012	.020	AC	44CCM	14mm	.030	A	5°B	.....	110 Min
TDH 3209, 3612, PDA3704†	GMD 4-71	4-4 $\frac{1}{4}$ x5	40-2000a	.....	.....	.....	.....	.009	.....	Diesel	.....	.....	.....	.....	.....	385°
TDH 4010, 4509, PD 4102†	GMD 6-71	6-4 $\frac{1}{4}$ x5	40-2000a	.....	.....	.....	.....	.009	.....	Diesel	.....	.....	.....	.....	.....	385°

*—At 500 rpm.

†—All Diesels.

a—25 psi minimum at speeds shown for worn engines.

A—.018—.024.

VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
270	147	1 $\frac{1}{16}$	58	1 $\frac{1}{16}$
4-71, 6-71 Exhaust	140	1 $\frac{1}{16}$	44	2 $\frac{1}{16}$

FRONT END

MODEL	TOE-IN (Inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
TGH 2708, 3101	1/8" - 1/4"	1	3 1/4	8 1/2
TDH 3209, 3612	1/8" - 1/4"	1	3 1/4	8 1/2
TDH 4010, 4509	1/8" - 1/4"	1	3 1/4	8 1/2
PD 4102	1/8" - 1/4"	1	3 1/4	8 1/2
PDA 3704	1/8" - 1/4"	1	2	8

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
TGH-2708, 3101, TDH-3209, 3612, 4010, 4509	30 above 32°	20W below 32°	A	A	140	90	B	B	50
PD4102, PDA 3704	30 above 32°	20W below 32°	50	50	140	90	B	B	50

A—Special hydraulic oil.

B—Special straight gear lube.

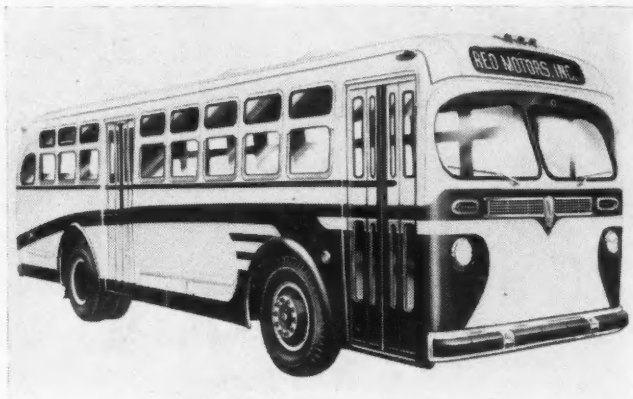
KALAMAZOO

MAINTENANCE DATA

REO



Model Cruiser



Model Flying Cloud

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
Kalamazoo Cruiser	160	17	Pos
Reo Flying Cloud	160	17	Pos

TENSIONS

MODEL	Cylinder Head (pounds-foot)	Main Bearings (pounds-foot)	Connecting Rod Bearings (pounds-foot)
IHC 269	75-85	100-110	60-70
Cont. TH 6427	130-140	100-110	100-110

CAPACITIES

MODEL	Engine Quarts	Trans-mission Pints	Rear Axle Pints	Cooling System Capacity, Quarts
Kalamazoo Cruiser	7	9	21	40*
Reo Flying Cloud	16	9	21	40*

*—With torque converter, 44 qt.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After	Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)	SPARK PLUG	Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
Kalamazoo Cruiser	IHC 269	6-3 1/2 x 4 1/2	40-2000	16° B	.022	.018 .018	AC 43	.024	3° B	6° B	120
Reo Flying Cloud	Cont. TH 6427	6-4 1/2 x 4 1/2	40-1500	16° B	.022	.016 .016	CH 18mm	.025	A	6° B	120

A—.018—.024.

VALVE SPRINGS

MODEL	Valve Open Pressure (Ave.) Pounds	Valve Open Length Inches	Valve Closed Pressure (Ave.) Pounds	Valve Closed Length Inches
IHC 269	107	1.668	211*	1 1/8
Cont. TH 6427	I. 13 O. 56	1.668	13 56	1 1/8

I—Inner, O—Outer.
*—Free length.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
Kalamazoo Cruiser	1/8-1/4	1	1	8 1/2
Reo Flying Cloud	1/8-1/4	1	1	8

LUBRICATION

LUBRICATION	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI- VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
Kalamazoo Cruiser	(S) 40	(W) 20								
Reo Flying Cloud	40 above 32°	30 below 32°	20W below 0°	140	90	140	90	140	90	GL
S—Summer. GL—Gear lube. W—Winter.										

SOUTHERN

TRANSIT



Models F-31, F-35, F-41, S-36,
S-41, S-45 Series

Model 91

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
SOUTHERN All Models	160*	102	Pos
TRANSIT 91	160	17	Neg

*—Discharge at 20 hr.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
SOUTHERN Wau. 6M2A	75	75	68
Wau. 140GKB	130	130	100
TRANSIT 91	70-75	100-110	100-110

CAPACITIES

MODEL	LUBRICANT CAPACITY					Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints		
SOUTHERN						
F-31M	15	8	20	60		
F-31H	15	9	20	60		
F-35M, F-41M	15	8	23	60		
F-35H	15	9	23	60		
S-36H	14	9	23	60		
S-36M	14	8	23	60		
S-41M, F-45H	14	9	31	60		
S-41H, F-45M	14	8	31	60		
TRANSIT 91	9	8	14	40		

M—Mechanical trans.
H—Hydraulic trans.

TUNE UP

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
SOUTHERN COACH, Note 1 F-31M, F-31H, F-35M, F-35H, F-41M S-36M, S-36H, S-41M, S-41H, S-45M, S-45H	Wau 6M2A* Wau 140GKB	6-4 1/4 x 4 3/4 6-4 1/2 x 5 1/2	40-2100 40-2100	8"B 15"B	2.83 5.3	.008 .017	.010C .013C	.020C .025C	CH CH	8 COM 10 COM	18mm 14mm	.025 .025	.020 .020	5B TC	TC TC	80† 100†
TRANSIT 91	Con B6427	6-4 1/8 x 4 7/8	40-50-1800	16		.017	.017C	.022C		5 COM	18mm	.030	.022	6"B	3B	90†

*—Horizontal.

†—Minimum.

C—Cold.

Note 1—Models designations ending in M have mechanical trans. Models designations ending in H have hydraulic transmissions.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
SOUTHERN Waukesha 6M2A	101	1 1/2	64	2 1/2
140GKB	127	1 1/2	67	2 1/2
	70	1 1/2	30	1 1/2
TRANSIT Con. B6427	119	1.52	61	1 7/8
	31.5	1 1/2	14.3	1 1/2

O.—Outer. I.—Inner.

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
SOUTHERN F-31, F-35*	1/8 ± 1/16	1 ± 1/2	1	8
All Models†	3/8 ± 1/16	1 ± 1/2	1	5 1/2
TRANSIT 91	1/8-3/8	1	3	8 1/2

*—With 35141 or 36008 axles.

†—With F-900 series axle.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
SOUTHERN All Models	40 above 70°	30 above 50°	A	50	50	0-65°	0-65°	250	160	CL
TRANSIT 91	40 summer	30 winter		140MO	90MO	140EP	90EP	90EP	90EP	140

A—20/20W above 30°, 10W below 30°.

CL—Chassis lube.

*—Government specification.

MO—Mineral oil straight.

EP—Extreme pressure gear oil.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
34S, 38S, 41S, 44S, 58D [†]	20*	7**	12a	21a	42†

a—Pounds.

*—12 qt. change.

**—Mech. 11 pts.

†—Without heaters.

‡—Quantities shown are for each engine-transmission unit.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Models	158	17	Pos

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
FTC-180, 210	80	90	90

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)			SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Intake	Exhaust	Make	Type	Size	Gap				
Engines Interchangeable.	FTC-180	6-4 1/2 x 4 3/4	45-2000	12°B		.018	.012	.015	CH*	J-6*	14mm	.025*	.018	TC		155†
In All Models	FTC-210	6-4 1/2 x 5	45-2000	12°B		.018	.012	.015	AL*	AR-5*	14mm	.033*	.018	TC		150†

*—Champion or Auto-Lite spark plugs can be used in both engines.

†—At 200 rpm.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
FTC-180, 210	132-140	1 1/8	65-72	1 1/8

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
34S, 38S, 58D*	1/8	1	1 1/2	8
41S, 44S	1/8	1	1 1/2	5 1/2

*—And trailing axles.

LUBRICATION

MODEL	ENGINE			TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range			Summer	Winter	Summer	Winter	Summer	Winter	
34S, 38S, 41S, 44S, 58D	10 above 0°	20 above 20°	30 above 50°*	140EP†	90EP†	140EP	90EP	140EP	90EP	No. 1 CG
	10 above 0°	20 above 20°	30 above 30°*	140EP†	90EP†	140GO	90GO	140EP	90EP	No. 1 CG

*—SAE 40 above 75°F.

†—With torque converter use SAE 50 engine oil, summer and winter.

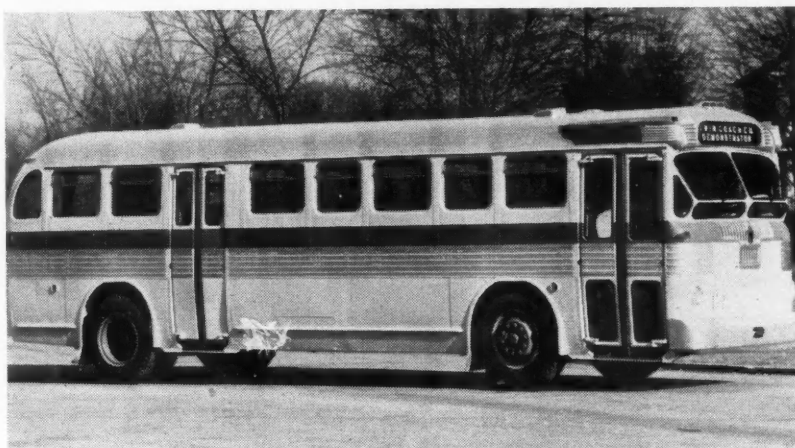
EP—Extreme pressure lube.

CG—Chassis grease.

GO—Gear oil.

MAINTENANCE DATA

TWIN COACH



Models 34S, 38S, 41S, 44S, 58D

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

WHITE



Models 1136, 1136S, 1140, 1140S, 1144, 1144S

Note: Specifications are for standard models. If optional engine is used, see data for appropriate engine on this page or under engine manufacturer's listing on pages 92 to 95

CAPACITIES

MODEL	LUBRICANT CAPACITY				
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	Cooling System Capacity, Quarts
1136, 1140	15†	80	22	21a	21a
1144	10‡	80	22	21	21
1136S, 1140S	15†	20	22	21	21
1144S	10‡	20	22	21	21

*—Gallons; with heaters.
†—Oil change with old filter.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
All Models	160	17	Pos.

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
280 TA	105-110	70-75	70-75
24 A	85-90	70-75a	48-52

a—Front, center and rear. Intermediate, 105-115.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	Intake Valve Opens B-Before A-After		OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °TC B-Before A-After	Spark Occurs Flywheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC	Intake Tappet Clearance for Valve Timing	Exhaust	Make	Type	Size	Gap				
1136, 1140, 1136S, 1140S	Own 280TA	6-4½x5	15*B	—	—	—ZE	RO	LASH—	CH	6COM	18mm .025	6*B	—	—	—
1144, 1144S	Own 24A	12-4½x4¼	10*B	—	—	—ZE	RO	LASH—	CH	6COM	18mm .025	—	—	—	—

VALVE SPRINGS

MODEL	VALVE SPRINGS			
	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
1136, 1140, 1136S, 1140S (280TA)....	190	1.827	93	2.250
1144, 1144S (24A).....	124	2.013	77*	2.394

*—Installed height.

FRONT END

MODEL	TOE-IN (Inches)	CAMBER (In degrees)	CASTER (In degrees)	K. P. SLANT (In degrees)
ALL MODELS	½	1	0	8½

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
1136, 1140, 1144	(S) 30	(W) 20	20*	10*	140	90	SGL	SGL	140
1136S, 1140S, 1144S	(S) 30	(W) 20	70	70	140	90	SGL	SGL	140

(S)—Summer.

(W)—Winter.

*—Approved torque converter fluid must be used.

SGL—Steering gear lubricant 150-160.

CAPACITIES

MODEL	LUBRICANT CAPACITY				Cooling System Capacity, Quarts
	Engine Quarts	Transmission Pints	Rear Axle Pints	Front Axle Pints	
CHEVROLET.....	5½†	1½	3½	3	15
DODGE.....	5	2½	3½	3	15
FORD (6 Cyl.).....	5	4	3½	3	17.3
(8 Cyl.).....	5	4	3½	3	22
NASH (Statesman).....	5	2½	3½	3	14
PLYMOUTH.....	5	2½	3½	3	15
PONTIAC (6 Cyl.).....	5	1½	3½	3	18.21
STUDEBAKER (Champion).....	5	1½	2½	3	10

*—Includes oil filter.

†—5½ qt. dry, 5 qt. refill.

BATTERY

MODEL	Amp. Hr. Capacity	Number of Plates	Terminal Grounded
CHEVROLET.....	100	15	Neg
DODGE.....	105	15	Pos
FORD (6 Cyl.).....	100	17	Pos
(8 Cyl.).....	90	15	Pos
NASH (Statesman).....	90	13	Pos
PLYMOUTH.....	100	15	Pos
PONTIAC.....	100	15	Neg
STUDEBAKER (Champion).....	100	15	Pos

TENSIONS

ENGINE MODEL	Cylinder Head (pounds-feet)	Main Bearings (pounds-feet)	Connecting Rod Bearings (pounds-feet)
CHEVROLET.....	70-80	100-110A	40-50
DODGE.....	C65-70 N52-57	74-80	53-58
FORD (6 Cyl.).....	65-70	100	45-50
(8 Cyl.).....	65-70	100	45-50
NASH.....	67-60	66-70	27-30
PLYMOUTH.....	C65-70 N52-57	74-80	53-58
PONTIAC.....	60	91-102	42-51
STUDEBAKER (Champion).....	50-54	90	50

C—Cap screws.

N—Nuts.

A—With oiled threads.

TUNE UP

MODEL	Standard Engine Make and Model	Number of Cylinders, Bore and Stroke	Normal Oil Pressure Lb. at M.P.H. or R.P.M.	B-Before A-After		Intake Tappet Clearance for Valve Timing	OPERATING TAPPET CLEARANCE (Hot unless noted)		SPARK PLUG				Breaker Point Gap	Spark Occurs °C B-Before A-After	Spark Occurs Fly-Wheel Teeth °TC B-Before A-After	Comp. Pressure at Cranking Speed
				°TC	Flywheel Teeth TC		Intake	Exhaust	Make	Type	Size	Gap				
CHEVROLET		6-3½x3½	14 @ 39	1°B		..006	.013	AC	46-5	14mm	.035	.018A	5°B			110
DODGE		6-3½x4½	45 @ 20	8°B		.014	.008	AL	A-5R	14mm	.035	.020	TC			120
FORD (6 Cyl.)		6-3.3-4.4	50-54@30-40	11°B		.015	.010C	CH	H-10	14mm	.030	.025	TC			110
(8 Cyl.)		8-3½x3½	40@30-40	5°B		a	.011	.015	CH	H-10	14mm	.030	.015	2°B		100
NASH (Statesman)		6-3½x4	50 @ 30	6°B		.019	.015	AL	A-5	14mm	.030	.021	TC			120
PLYMOUTH		6-3½x4½	45 @ 20	12°B		.014	.008	AL	A-5R	14mm	.035	.020	TC			120
PONTIAC (6 Cyl.)		6-3½x4	35 @ 40	5°B		.012	.012	AC	45	14mm	.025	.022	6°B			160
STUDEBAKER (Champion)		6-3x4	40 @ 25-30	15°B		.020	.016C	CH	J-7	14mm	.025	.020	2°B			120

*—At cranking. †—At 1000 RPM. C—Cold. A—with worn breaker-lever. **—Use exhaust valve set to zero lash. §—At 150 rpm.

*—At cranking. †—At 1000 RPM.

a—.018 opening, .020 closing.

C—Cold.

A—with worn breaker-lever.

**—Use exhaust valve set to zero lash.

§—@ 150 rpm.

VALVE SPRINGS

MODEL	Valve Open		Valve Closed	
	Pressure (Ave.) Pounds	Length Inches	Pressure (Ave.) Pounds	Length Inches
CHEVROLET.....	132	1.505	58	1.821
DODGE.....	111	1.375	45	1.75
FORD (6 Cyl.).....	116	1.75	50	2.11
(8 Cyl.).....	82	1.81	38½	2.13
NASH (Statesman).....	83	1.437	39	1.75
PLYMOUTH.....	111	1.375	45	1.75
PONTIAC (6 Cyl.).....	101	1.593	59½	1.906
STUDEBAKER (Champion).....	93-103	1.3125	49-54	1.656

FRONT END

MODEL	TOE-IN (in inches)	CAMBER (in degrees)	CASTER (in degrees)	K. P. SLANT (in degrees)
CHEVROLET.....	0-½	½±½	½±½	4±½
DODGE.....	0-½	0-½	N1-P1	4½-6
FORD (All Models).....	½-¾	N½P½	N1-P1	5½
NASH (Statesman).....	½-¾	0-½	0-½	8½
PLYMOUTH.....	½-¾	0-½	N1-P1	4½-6
PONTIAC (6 Cyl.).....	½-¾	0	N½	5½
STUDEBAKER (Champion).....	½-¾	0-1a	±1	5½

N—Negative.

P—Positive.

a—½° greater camber on left side.

LUBRICATION

MODEL	ENGINE		TRANSMISSION		REAR AXLE		STEERING GEAR		UNI-VERSAL JOINT
	Viscosity and Temperature Range		Summer	Winter	Summer	Winter	Summer	Winter	
CHEVROLET.....	20 above 32°	20W@10° to 32°	10W@-10° to 10°*	90	90Hyp	90Hyp	A	A	Per Fib O
DODGE.....	30 above 32°	20W@10° to 32°	10W@-10° to 10°†	80	90	90	90	90	
FORD (All Models).....	20 above 32°	10W@-10° to 32°	*	80	90EP	90EP	140M	140M	
NASH (Statesman).....	20 above 32°	10W@-10° to 32°	*	90	90Hyp	90Hyp	140EP	140EP	
PLYMOUTH.....	30 above 32°	20W@10° to 32°	10W@-10° to 10°†	80	90	90	90	90	Fib
PONTIAC (6 Cyl.).....	20W-20 ab. 32°	20W-10 above 10°	10W above -10°	90EP	90EP	90Hyp	B	B	A
STUDEBAKER.....	30@32° to 90°	20@10° to 32°	10-10W below 10°	90	90	90			

*—10% Kerosene below -10°.

Per—Permanent.

†—Below -10°, 5W.

M—Mild EP

A—Multi-purpose gear lube or chassis lube.

EP—Extreme pressure lube.

B—All-season steering gear lube.

Hyp—Hypoid gear lube.

MAINTENANCE DATA

PASSENGER CARS

CHEVROLET (1950 Models)

DODGE (All 1950 Models)

FORD (All 1950 Models)

NASH (1950 Statesman)

PLYMOUTH (All 1950 Models)

PONTIAC (1950 6-Cyl. Models)

STUDEBAKER (1950 Champion)

TROUBLE SHOOTING

Noise, wear, appearance or peculiar operating characteristics tip off the troubleshooter in locating breakdowns and causes of failure. This comprehensive guide will help the me-

chanic track down potential road breakdowns, costly part failures and unsafe vehicle conditions. Following procedure is arranged in sequence for speed and efficiency.

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Engine Starting

1. When starter won't function:

a. If lights stay bright, check for—

Open circuit at starter
Stuck solenoid
Defective starter switch
Improperly seating brushes
Broken starter drive

b. If lights dim slightly, check for—

Jammed starter drive
Dirty commutator
Resistance at starter switch

c. If lights go out, check for—

Discharged battery
Loose battery cable
Corroded terminals
Defective cell
Tight engine bearings

2. When starter turns, and engine won't start:

a. If ammeter is dead, there is an open circuit in the primary. Check for—

Points set too wide
Corroded points
Defective ignition switch
Defective distributor drive
Loose wire at distributor (primary)
Open winding in coil
Defective ammeter

b. If ammeter shows steady discharge, there is a grounded primary. Check for—

Defective insulation, primary wires
Points set too close
Worn distributor cam lobes

Worn rubbing blocks on points
Grounded contact point arm
Shorted condenser
Shorted primary winding in coil

c. If ammeter reading is normal, but spark does not reach plugs, check for—

Wet high tension wires
Defective distributor cap
Defective rotor brush or contact
Grounded wire, coil to distributor
Corroded wells in distributor cap
Defective coil or condenser

3. When spark is ok, but engine won't start:

a. If there is no fuel at carburetor, check for—

Empty gas tank
Clogged fuel line
Clogged fuel filter
Restricted vent in gas tank
Defective fuel pump
Air leak in line from tank
Clogged carburetor screen

b. If there is fuel at carburetor, check for—

Flooding at carburetor
Choke not operating
Water in gasoline
Restricted carburetor jets

c. If fuel does not reach carburetor, check for—

Poor engine compression
Leaking intake manifold
Loose carburetor flange
Broken manifold heat control valve
Valves out of time
Restricted low speed circuit

d. If there is flooding at carburetor, check for—

Choke out of adjustment
Clogged air strainer
High float level
Excessive fuel pump pressure

4. When there is good spark and proper fuel supply—check for:

Defective spark plugs
Spark plug gap set too wide
Improper spark timing
Water in cylinders
Poor fuel



Engine Operation

1. When engine misfires at idle:

a. Trouble may be in ignition. Check for—

Plug gaps set too wide
Defective spark plugs
Sticking breaker arm
Incorrect breaker point gap
Loose wire in primary circuit
Defective distributor rotor
Corroded, pitted breaker points
Cracked distributor cap
Leaking or wet high tension wires
Worn cam lobes on distributor shaft
Worn distributor shaft bushings
Defective coil or condenser
Defective ignition switch
Spark out of adjustment

b. Trouble may be carburetion. Check for—

Dirt or water in fuel
Incorrect fuel level
Leaking intake manifold
Burned heat riser tube

2. When engine misfires at high speed:

a. Check for conditions under No. 1

b. Check spark for—
Weaker breaker arm spring
Breaker points set too wide
Defective spark advance
Wrong type spark plugs
Weak valve springs
Excessive carbon in head
Poor compression

3. When engine backfires:

a. Through exhaust, check for—

Cracked spark plug porcelain
Crossed spark plug wires
Air leaks at manifold
Weak valve springs

b. Through carburetor, check for—

Poor quality fuel
Excessive lean or too rich mixture
Intake manifold air leaks
Sticking distributor governor
Improper ignition timing
Engine preignition
Incorrect valve timing
Improperly seating valves

4. When there is preignition:

a. Check for ignition causes—

Spark set too fast
Incorrect type spark plugs
Burned spark plug electrodes
Faulty distributor advance

b. Check for fuel causes—

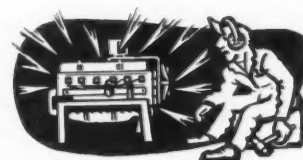
Poor grade of fuel
Lean carburetor mixture
Inoperative heat control valve

c. Check for overheated valves from—

Insufficient valve tappet clearance
Incorrect valve seat width
Thin edged valves
Too strong valve springs
Incorrect type of valve

d. Check for other causes, such as—

Excessive engine temperature
Carbon deposits in combustion chamber
Sharp edges in combustion chamber
Cylinder head projection into chamber



Engine Noises

1. If there is knocking at the crankshaft, check for:

Insufficient oil supply
Low oil pressure
Diluted oil—water or gasoline

Guide

by

M. K. SIMKINS

Technical Editor
Commercial Car Journal

Loose flywheel
Excessive bearing clearance
Excessive end play
Out-of-round bearing journals
Misaligned crankshaft
Broken crankshaft web
Distorted crankcase

2. If there is knocking at the con-rods, check for:

Insufficient oil supply
Low oil pressure
Excessive bearing clearance
Misaligned con-rod caps
Misaligned con-rods
Tapered, out-of-round journals

3. If there are piston noises, check for:

Excessive piston to cylinder bore clearance
Eccentric or tapered cylinders
Insufficient piston pin clearance
Piston hitting cylinder ridge
Carbon in top of cylinder
Piston hitting cylinder heat gasket
Excessive clearance at ring groove
Pin hole out of round with piston
Ring lands not properly relieved

4. If there is piston pin noise, check for:

Excessive piston pin clearance
Insufficient piston pin clearance
Loose piston pin lock
Con rod end rubbing piston pin boss

5. If noise is at oil pump or distributor shaft, check for:

Oil pump loose on mountings
Damaged or scuffed oil pump gears
End play in distributor shaft drive
Worn shaft bushings
Couplings loose on shaft
Worn oil pump and distributor driven gear
Worn or damaged camshaft drive gear
Improper mesh of drive and driven gears

6. If noise is in water pump, check for:

Lack of lubrication (lubricated types)

Worn shaft bearings
Pulley loose on shaft
Pump impeller loose on shaft
Excessive end play of pump shaft
Impeller blades rubbing pump housing
Impeller broken or pin sheared

7. If noise is at the engine fan, check for:

Belt adjustment too tight or too loose
Grease or rust on pulleys
Worn or burned fan belt
Incorrect type or size fan belt
Misaligned pulley
Excessive fan shaft end play
Fan blades loose on spider of hub
Fan blades striking radiator
Unbalanced fan assembly
Uneven pitch of fan blades
Bent, distorted fan blades

8. If noise is in fuel pump, check for:

Fuel pump body loose on engine
Scored lever or cam eccentric
Interference of lever with crankcase surface
Worn rocker arm or rocker arm spring
Weak or worn rocker arm contact spring



High Oil Consumption

1. Check for external leakage at:

Outside oil lines
Front main bearing
Rear main bearing
Oil pan gaskets
Crankcase ventilator pipe
Fuel pump gaskets
Valve cover gaskets
Timing gear cover gasket
Crankcase drain plug
Oil filter gaskets
Oil filter connections

2. Check for defective rings due to:

Worn or broken rings
Insufficient tension in rings
Insufficient clearance of ring gap
Ring fitted too tight in grooves
Carbon in oil ring slots
Insufficient ventilation of oil rings
Rings out of round, warped, twisted
Wrong size rings

3. Check for defective cylinder surface showing up in:

Worn, wavy, distorted cylinders
Rough finish in cylinders
Scored cylinder walls

4. Check for defective pistons due to:

Normal wear
Out of round pistons
Collapsed piston skirt
Insufficient drain holes in oil ring grooves
Worn ring grooves
Improperly fitted pistons
Misalignment of piston and rod assemblies

5. Check for defective bearings due to:

Scored con-rod bearings
Worn main bearings
Leaking main bearing seals
Worn camshaft bearings
Spurt holes in worn rods
Plugged oil seal drain
Out-of-round crankshaft
Misaligned bearing caps
Misaligned crankshaft

6. Check for defective valves due to:

Valve timing too late
Incorrect tappet clearance
Leaky or burnt valves
Plugged valve chamber drain
Worn valve seats
Worn valve stems or guides

7. Check condition of oil:

Oil level too high
Thin, diluted oil
Oil pressure too high
Broken oil lines
Poor grade oil

8. Check for other contributing factors:

Clogged breather
Clogged oil filter
Clogged muffler, tail pipe
Leaky intake manifold gaskets
Defective spark plugs
Faulty carburetion
Overheated engine
Defective booster pump diaphragm
Worn timing gears or chain
Sustained high speeds
Improper break-in of newly running engine



High Gas Consumption

1. When trouble is in carburetor—check for:

a. Flooding or leaking caused from—

Cracked carburetor casting
Leaking line connections
Defective carburetor bowl gasket
High float level
Plugged vent hole in cover
Loose float needle seat
Defective needle valve seat gasket
Worn needle valve and seat
Foreign matter clogging needle valve
Ridge worn in lip of float
Worn float pin or bracket
Float binding in bracket
High fuel pump pressure

b. An overrich mixture caused from—

Restricted air cleaner
Too much oil in air cleaner
Choke lever stuck
Choker valve spring stuck

Leaking float
High float level
Warped or bent bowl cover
Worn metering rod
Worn high speed circuit jets
High fuel pump pressure

c. Too rich choke caused from—

Plugged air strainer
Binding butterfly valve
Choker shaft binding
Stuck or binding choke piston
Leak in choke gasket
Improper adjustment of accelerating pump

2. When trouble is in fuel pump, check for:

Leakage around diaphragm cover
Leaking fuel pump diaphragm
Leaking sediment bowl gasket
Loose valve seats
Warped check valves
Dirt, sediment in valves
Corroded valve seats
High fuel pump pressure

3. When there is fuel loss, check for:

Leakage at lines and connections
Leaking gas tank
Evaporation from partially filled tank
Evaporation from overheated lines
Leakage at filler cap

4. When trouble is caused by ignition conditions, check for:

Incorrect spark timing
Leaking high tension wires
Incorrect spark plug gap
Fouled spark plugs
Worn breaker points
Faulty spark advance
Defective condenser
Weak ignition coil
Pre-ignition

5. When trouble is caused by poor compression check for:

Leaking head gasket
Worn or broken piston rings
Worn pistons and cylinders
Worn valve stems or guides
Sticking valves
Poorly seating valves
Weak valve springs
Distorted head or block

6. Check for other vehicle factors such as:

Loose carburetor flange on manifold
Improperly adjusted or worn throttle linkage
Restricted exhaust system
Carbon in manifold
Improperly adjusted manifold heat control
Leaking windshield wiper hose
Leaking intake manifold gasket
Leaking manifold intake heat riser
Overheating engine
Unsatisfactory engine warm-up
Use of poor grade of gasoline

7. When chassis conditions are to blame, check for:

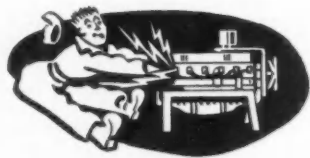
Dragging brakes
Slipping clutch
Under-inflated tires
Excessive engine friction

8. When driving conditions are to blame, check for:

High speeds
Rapid acceleration
Excessive use of low gears
Excessive idling
Improper engine warm up
Use of too heavy lubricants
Driving over hilly country
(Turn to next page, please)

Troubleshooting Guide

Continued from Page 107



Electrical

1. With battery as guide:

- a. If frequent charge is necessary, check for—
 - Low regulator setting
 - Slipping generator drive
 - Corroded battery terminals
 - Worn out, inefficient battery
 - Short circuit in charging circuit
 - Stuck cut-out in regulator
 - Excessive use of electrical units
 - Excessive drag in engine
- b. If there is high water loss, check for—
 - Too high charging rate
 - Old, inefficient battery
 - Leaking battery cell
 - Cracked battery case
 - Defective current regulation
- c. If battery will not take full charge, check for—
 - Low water level
 - Worn out battery
 - Spilled electrolyte
 - Internal short circuit
 - Impure electrolyte (doped up)

2. With starter as guide:

- a. If there is excessive current draw, check for—
 - Broken, jammed starter drive
 - Dirty, gummed armature
 - Shorted armature
 - Grounded armature or field
 - Resistance in engine parts
 - Use of too heavy oil in winter
 - Misaligned starting motor
 - Worn armature shaft bearings
 - Misaligned armature shaft
 - Loose field pole pieces
- b. If starter fails to operate, check for—
 - Poor battery ground
 - Jammed drive
 - Broken teeth on flywheel
 - Direct ground in switch
 - Burned contact points in switch
 - Improper seating brushes
 - High mica between commutator segments
 - Shorted armature
 - Shorted field or brushes
- c. If there is excessive noise at starter, check for—
 - Defective starter drive
 - Chipped flywheel teeth
 - Insufficient lubrication
 - Worn armature shaft bearings
 - Misaligned starting motor
 - Loose starter mounting
 - Sprung armature shaft
- d. If there are burned commutator bars, check for—
 - Excessive arcing at brushes
 - Excessive battery voltage
 - Improper seating brushes
 - Open circuited armature coils
 - Open field circuit

3. With lights as guide:

- a. If there is excessive voltage drop, check for—
 - Corroded, rusty grounds
 - Loose connections
 - Cracked, leaking wire insulation
 - Frayed, broken cable strands
 - Insufficient capacity wiring

b. If lamps fail to light, check for—

- Blown fuse
- Burned out bulbs
- Loose connections
- Open circuit in wiring
- Run down battery
- Defective light switch

c. If lights flicker, check for—

- Loose connections
- Poor grounds at lamps

d. If bulbs burn out, check for—

- Excessive battery voltage
- Corroded, defective grounds
- Excessive charging rate
- Short in wiring
- Incorrect type of bulbs
- Poor grade of bulbs

4. With generator as guide:

a. If generator fails to charge, check for—

- Open charging circuit
- Cut-out points stuck open
- Sticking brushes
- Dirty, gummy commutator
- Burned out commutator
- Grounded wire in charging circuit
- Grounded field coil
- Short circuit in field
- Open coil in cut-out windings

b. If there is a low, unsteady charging rate, check for—

- Conditions listed in (a.)
- Slipping fan belt
- Loose generator pulley
- Improper seating brushes
- Worn brushes, weak spring tension
- Incorrect type of brushes
- Out of round commutator
- Resistance in charging circuit
- High mica between commutator bars
- Grounded generator field
- Open armature winding
- Loose pole pieces in field circuit
- Defective ammeter

c. If there is an excessive charging rate, check for—

- Improperly set regulator
- Defective regulator
- Overheated battery
- Improper third brush setting
- Shorted field—internal grounded type
- Grounded field—external ground type

d. If generator is noisy, check for—

- Misaligned fan belt or pulley
- Improper seating brushes
- Worn or damaged bearings
- Insufficient bearing lubrication
- Loose generator drive pulley
- Loose field pole pieces
- High armature slot wedges
- Excessive output

e. If there is arching and noise at brushes, check for—

- High mica between commutator bars
- High commutator bars
- Out of round commutator
- Sprung armature shaft
- Dirty, glazed commutator
- Hard spots in brushes
- Weak brush spring tension
- Brushes worn down or loose
- Loose wiring at pigtails
- Shunts loose in brushes
- Excessive output

f. If armature fails prematurely, check for—

- Excessive charging rate
- Failure of voltage regulator
- Improper type brushes
- Worn shaft bearings

5. With regulator as guide:

- a. If there is excessive oxidation of points, check for—
 - Reversed polarity
 - Poor ground connections
 - Misaligned contact points
 - Improper air-gap setting
 - Shorted field in generator
 - Wrong type of replacement points
 - Open shunt resistors

b. If there is excessive point pitting, check for—

- Long usage with normal wear
- High current output of generator
- Insufficient point spring tension
- Reverse polarity in generator
- Pitting cut-out points
- Suppression condenser on "F" terminal
- Items under 2A

c. If there are burned coil windings, check for—

- Excessive current output
- Stuck cut-out points
- Short in charging circuit
- Resistance in ground circuit

d. If there are sticking contact points, check for—

- Misaligned points
- Poor ground connection between generator and regulator
- Shorted field coil in generator
- Pitted or oxidized points
- Defective winding in regulator
- Open resistance unit

6. With ignition system as guide:

a. If there is breaker point oxidation, check for—

- High battery voltage
- Oil and crankcase vapors
- Filings lodged on points
- High resistance in condenser circuit
- Incorrect type ignition coil

b. If there is ignition coil failure, check for—

- Extremely high voltages
- Moisture formation
- Excessive heat from engine

c. If there are condenser failures, check for—

- Normal fatigue
- Excessive heat
- Moisture

d. If spark plugs burn and foul, check for—

- Incorrect type plug
- Too rich fuel mixture
- Engine pumping oil
- Inferior grade of gasoline
- Overheated engine



Compression Losses

1. Check for compression failures:

- a. Engine performance shows up in—
 - Loss of power
 - Oil pumping—blow-by
 - Smoking exhaust
 - High oil consumption
 - Diluted engine oil
 - Poor acceleration
- b. Engine sounds indicate—
 - Clicking—broken ring or land
 - Knocking—piston slap or broken piston
 - Hissing at breather—defective intake valve
 - Hissing at exhaust—defective exhaust valve
 - Regular hiss—blown gasket
 - Backfiring through carburetion—valve
 - Backfiring on acceleration—valve failure
 - Engine miss at all speeds

- c. A compression gage shows—
 - Low compression reading
 - Low reading—two cylinders
 - Leak past valves—compressed air test

- d. A vacuum gage shows—
 - Low vacuum gage reading
 - Fluttering of needle
 - Irregular drop in vacuum

2. Check piston ring conditions:

- a. If rings are broken, cause may be—
 - Wrong type, size ring
 - Ring striking top ridge
 - Worn ring grooves
 - Broken ring lands
 - Insufficient ring tension
 - Insufficient gap clearance
 - Excessive side clearance in ring groove
 - Undersize pistons
 - Scored, wavy cylinder walls
 - Overheating

b. If there is ring sticking, check for—

- Compression blow-by
- Incomplete combustion
- Engine detonation
- Inadequate crankcase ventilation
- Improper engine cooling
- Insufficient ring land side clearance
- Dirty, contaminated oil
- Incorrect type of oil
- Poor grade of oil or fuel
- Lugging engine
- Excessive engine idle

c. If rings are noisy, check for—

- Broken piston ring
- Worn ring grooves
- Broken ring lands
- Lack of inner ring tension
- Top ring striking cylinder ridge
- Undersize pistons
- Wavy cylinder walls

3. Check for piston failures:

- a. If there are piston noises, check for—
 - Carbon accumulations in head
 - Broken piston, skirt, ring land
 - Insufficient clearance at top ring land
 - Collapsed piston skirt
 - Eccentric or tapered cylinders
 - Excessive piston to bore clearance

b. If there is piston breakage, check for—

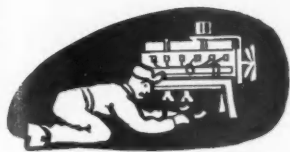
- Inadequate lubrication
- Oversteering and overloading
- Pre-ignition
- Engine overheating
- Misaligned connecting rods
- Undersize pistons
- Eccentric or tapered cylinders
- Warped cylinder barrels

4. Check for cylinder failures:

- a. If there is excessive wear, scoring, check for—
 - Inadequate lubrication
 - Contaminated or poor oil
 - Incomplete combustion
 - Too harsh type rings
 - Improper cylinder finish
 - Sharp edge left on piston skirt
 - Insufficient ring gap clearance
 - Tight piston pins
 - Misaligned connecting rods, pins
 - Distorted block, crankshaft
 - Cylinders bored out of line
- b. If there is cylinder warpage, check for—
 - Engine overheating
 - Improper head tightening
 - Steam pockets in block
 - Deposits between dry sleeve and bore
 - Improper sleeve installation

5. Check on valve seating for:

- Insufficient valve-tappet clearance
- Broken, weak valve springs
- Improper valve timing
- Deposits under head and stem
- Warped heads and stems
- Cracked valves and seats
- Burned valves and seats
- Warped or binding guides
- Improper grinding operations
- Worn timing gears or chain



Bearings

1. Check for premature wear:

Caused by dirt from—
Careless service methods
Contaminated oil
Infrequent oil changes
Dirty oil filters
Dusty operation

2. Caused by improper fitting due to:

Distorted con-rods
Mixing con-rod caps
Installing shells backwards
Filing shell to fit
Chiseling shell to reduce clearance
Dirt between brg. and rod bore
Out-of-round journals
Tapered journals
Warped crankshaft or block
Excessive crankshaft end play
Scored bearing surface
Improper clearance
Use of inaccurate tools
Improper tensions of studs

3. Caused by corrosion from:

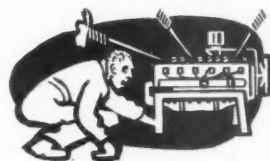
Crankcase acid vapors
Infrequent oil changes
Poor crankcase ventilation
Incomplete combustion
Engine blow-by
Inferior type of oil
Overcooling
Overheating

4. Caused by improper vehicle operation such as:

Overspeeding
Overloading
Lugging on hills
Spark detonation
Improper engine break-in
Racing a cold engine
Use of wrong type, grade oil
Use of improper fuel
Improper spark timing

5. Caused by lubrication failures resulting from:

Defective oil pump
Clogged oil pump screen
Excessive engine sludge
Excessive engine temperature
Use of too heavy oil in winter
Insufficient engine warm up
Insufficient quantity of oil
Crankcase dilution
Inadequate crankcase ventilation



Engine Valves

1. When valves break, check for:

Excessive tappet clearance
Cocked springs or retainers
Too much spring pressure
Excessive temperatures
Excessive engine speeds
Out of round seats
Worn valve guides
Worn retainers
Worn retainer grooves
Block distortion
Defective valve forgings

2. When valves burn, check for:

Close tappet clearance
Lean air-fuel mixture
Improper block cooling
Improper spark plug heat range
Pre-ignition
Improper spark timing
Weak valve springs
Gum formations on stem
Deposits on valve seats
Excessive detonation
Exhaust back pressure
Improper valve-guide clearance
Warped valves or guides
Incorrect valve seat width
Inferior fuel
Eccentric valve face
Defective valve material

3. When there are valve deposits check for:

Inferior fuel
Inferior oil
Improper cooling
Rich carburetor setting
Dirty oil filters
Dirty air filters
Excessive oil pressure
Poor lubrication of stem
Worn valve stem
Bell-mouthed valve guides
Too much engine idling
Worn rings, cylinders, pistons

4. When valve springs break, check for:

Normal fatigue
Valve flutter at high speed
Corrosion of valve springs
Improper crankcase ventilation
Worn camshaft bearings
Worn crankshaft or bearings
Worn timing gears or chains
Worn lobes on camshaft

5. When valves are noisy, check for:

Excessive tappet clearance
Inadequate lubrication of rocker arms
Wear in tappets, adjusting screw
Wear in cam lobes
Wear in push rods
Wear in rocker arm assembly
Wear in valve guides

6. When precision adjustments are impossible, check for:

Wear in valve stem tip
Wear in adjusting tappet screw
Wear in push rod ends
Loose rocker arm assemblies
Worn rocker arms
Wear in tappet body
Wear in spring retainer slot
Wear in spring retainer cup



Hydraulic Brakes

1. Check from driver's seat for:

- Spongy pedal, a result of:
Air in fluid
Improper brake adjustment
Improper brake fluid
- Rubbery pedal, a result of:
Improper brake adjustment
Improper lining-drum contact
Lining of incorrect thickness
- No pedal reserve, a result of:
Normal wear of linings
Low hydraulic brake fluid
Defective master cylinder
- Loss of pressure, a result of:
External leak in lines
Leak in master cylinder check valve
Leak in cup of master cylinder
Leak in wheel cylinder, internal
Leak at stop light switch

e. Hard pedal, no free travel, a result of:

Swollen rubber cylinder cups
Restriction in bypass port of master cylinder
Improper lining

f. Pumping of pedal necessary, a result of:

Worn linings
Improper brake adjustment
Worn wheel cylinders or cups

g. Binding pedal, a result of:

Broken piston stop wire in master cylinder
Worn, tight, rusted linkage
Loose master cylinder mountings

h. Pedal striking toeboard, a result of:

Pedal stop ring out of seat in master cylinder
Misalignment of brake pedal
Misalignment of toeboard

i. Pedal failing to return, a result of:

Restricted bypass in master cylinder
Weak pedal return spring
Loose mountings of booster, pedal, master cylinder

j. No booster help, a result of:

Leak in vacuum lines
Loose connections
Worn valves in booster unit
Leak in diaphragm of booster unit
Linkage out of adjustment

2. Check on a road test for:

a. Poor brakes, no pedal reserve, a result of:

Improper drum-lining contact
Glazed linings
Oil-soaked linings
Improper pedal adjustment
Improper linings

b. Grabbing brakes, a result of:

Improper shoe adjustment
Grease soaked linings
Charred linings
Scored drums
Improper coefficient linings
Loose dust shields

c. Side pull, a result of:

Improper shoe adjustment
Excessive wear in drum
Scored drums
Grease-soaked lining
Loose anchor pins
Different makes of lining
Improper shoe assembly
Water, mud in brakes
Front spring U-bolts loose
Tires not properly inflated
Weak chassis springs

d. Squealing brakes, a result of:

Dirt in brake drum
Foreign material embedded in lining
Loose lining rivets
Bent backing plate
Sprung shoes
Shoes scraping on backing plates
Distorted brake drum
Incorrect lining

e. Overheating brakes, a result of:

Improper adjustment
Dirt and grime on drums
High spots on drum
Tight wheel bearings

f. Fading brakes, a result of:

Poor lining to drum contact
Improper lining

3. Check from the lift when:

a. One wheel drags, a result of:

Improper brake adjustment
Shoes improperly installed
Distorted cylinder cups
Brake shoe seized to anchor pin
Weak brake shoe return spring
Sprung shoes
Obstruction in line
Loose wheel bearing

b. Wheel locks, a result of:

Loose lining
Loose wheel bearing
Loose anchor bolts
Out-of-round drum
High spots on lining
Loose wheel bearing

c. All wheels drag, a result of:

Improper adjustment
No free pedal travel
Swollen cylinder cups
Restricted port in master cylinder
Improper assembly of shoes
Lining of incorrect thickness



Air Brakes

1. Check air pressure system for:

a. Slow pressure build-up, resulting from—

Too slow engine idle speed
Slipping compressor drive
Clogged compressor air strainer
Leaking lines or connections
Leaking discharge valves or seats
Carbon in discharge line
Excessive carbon in head
Insufficient unloader valve clearance
Worn piston rings in compressor
Scored cylinder walls in compressor

b. Quick loss of pressure, resulting from—

Leaking lines or connections
Leaking brake valves
Sticking discharge valves
Leaking governor valve

c. Compressor not unloading, resulting from—

Defective governor
Governor out of adjustment
Stuck unloading mechanism
Excessive clearance, unloader valves
Restriction in unloading line
Carbon in unloader cavity

d. Noisy compressor, resulting from—

Loose drive pulley
Worn, burned out bearings
Worn connecting rods
Loose piston pins
Broken piston rings
Broken discharge valves
Weak, broken valve springs
Carbon under discharge valves
Carbon deposits in head
Restricted oil line to bearings

e. Oil and water in system, resulting from—

Failure to drain tanks daily
Clogged air strainer
Worn rings in compressor
Scored cylinder walls
Excessive oil pressure
Excessive temperature changes

(TURN TO NEXT PAGE, PLEASE)

Troubleshooting Guide

Continued from Page 109

2. Check foundation system for:

a. Insufficient braking, resulting from—

Inadequate air pressure
Grease-soaked linings
Brake valve out of adjustment
Improper brake shoe adjustment
Lining of improper diameter
Glazed, worn out liners
Drums turned too thin
Push rods out of adjustment
Cams out of adjustment
Leaking brake chamber diaphragm

b. Slow brake application, resulting from—

Low air pressure
Improper brake shoe adjustment
Restricted lines and tubing
Excessive push rod travel
Leaking brake valve diaphragm
Frozen cams
Moisture frozen in system

c. Slow release of brakes, resulting from—

Improper brake adjustment
Frozen cams
Dry cam faces
Frozen anchor pins
Rusted cam lobes
Weak retractor springs

3. Check on road test for:

a. Grabbing brakes, resulting from—

Grease-soaked linings
Loose brake liners
Binding brake rigging
Loose backing plate
Defective brake valve
Out-of-round drums
Drums turned too thin
Loose, broken spider brake
Broken support plate
Flat spots on cam

b. Side pull, resulting from—

Improper brake adjustment
Defective lining
Oil soaked lining—one wheel
Improperly adjusted push rod travel
Broken shoe retractor spring
Leaking diaphragm in brake chamber
Unequal spring tension in diaphragm

c. Noisy brake application, resulting from—

Loose liners or rivets
Foreign particles imbedded in drums
Poor lining contact with drum
Loose backing plates
Tool marks in drum
Unbalanced brake linings
Thin brake drums
Glazed, thin linings
Weak, broken retractor springs
Broken, misaligned shoes



Cooling System

1. When there is external leakage, check for:

Loose, defective hose clamps
Defective rubber hose
Broken radiator seams
Corrosion perforation of water tubes
Loose core hole plugs
Worn water pump shaft, seal, bearing

Damaged gaskets, pump, cylinder
Warped cylinder head or block
Cracked cylinder head or block

2. When there is internal leakage, check for:

Loose cylinder head bolts
Damaged cylinder head gasket
Warped cylinder head or block
Cracked cylinder wall
Porosity of cylinder head (aluminum)
Deteriorated wet cylinder sleeve seals
Broken joints in oil coolers

3. When there is loss from overflow, check for:

Defective pressure valve in cap
Leakage of overflow tank
Defective radiator baffle plate
Air leak on suction side of pump
Air entrainment from top tank turbulence
Restricted passages in radiator
Steam formation at hot spots
Foaming of cooling liquid
Exhaust gas leakage into system

4. When there is restricted circulation, check for:

Slipping fan belt
Low or too high coolant level
Clogged radiator core
Collapsed radiator hose
Stuck thermostat
Pump impeller loose on shaft
Pump blades broken or worn
Clogged water jacket passages
Distribution tube dislocated
Air leak in suction side of system
Inadequate cooling system capacity

5. When engine overheats, check for:

a. Cooling system factors

caused by:
Causes listed in No. 4
Clogged bug screen
Coated radiator core fins
Radiator air baffles out of place
Bent fan blades
Oil and sludge in system

b. Spark conditions caused by:

Incorrect ignition timing
Improper fuel mixture
Low oil level
Defective spark advance mechanism
Incorrect valve timing
Pre-ignition
Clogged exhaust or muffler
Defective heat control valve
Tight engine, bearings, pistons, rods

c. Operating factors caused by:

Dragging brakes
Overloading of vehicle
Lugging engine on grades
Excessive engine idling
High sustained speeds
Driving in sand, snow, mud
Stop and go driving

6. When there is overcooling, check for:

Defective thermostat
Thermostat installed incorrectly
Automatic shutters not functioning
Defective heat control valve
Inaccurate temperature indicator
Excessive engine idling

7. When there is corrosion present, check for:

Impurities in water
Lack of rust inhibitor
Improper draining and service
Air leaks in system
Electrolytic action
High temperature

Transmission

1. When there is noise in neutral, check for:

Insufficient lubrication
Incorrect grade of lubricant
Misalignment of transmission
Sprung or worn countershaft
Excessive end play in countershaft, reverse idler, pinion
Worn mainshaft pilot bearing
Scuffed gear tooth contact surface
Excessive backlash in constant mesh gear
Unmatched constant mesh gears
Worn, rough reverse idler gear
Eccentric countershaft gear assembly
Defective second speed mainshaft gear bushing
Worn, scored countershaft bearings
Scuffed gear tooth contact surfaces
Worn transmission pinion bearing

2. When there is noise in gear, check for:

Conditions under No. 1
Noisy speedometer gears
Worn, rough mainshaft rear bearing
Excessive second speed mainshaft end play
Sliding gear teeth rough, chipped, tapered

3. When noise is due to other conditions, check for:

Out-of-balance fan
Loose engine mountings
Loose transmission mounting
Unbalanced clutch assembly
Out-of-balance flywheel
Out-of-balance crankshaft
Defective torsional damper
Worn universal joints
U-joints improperly installed
Misaligned, sprung driveshaft

4. When shifting is difficult, check for:

Improperly operating clutch
Improper adjustment of shifting linkage
Worn shifter rails
Worn, sprung shifter fork
Misaligned mainshaft
Buried mainshaft splines
Insufficient chamfer of sliding gear teeth
Sliding gear tight on shaft splines
Damaged synchronizing unit

5. When gears can't be shifted, check for:

Improperly operating clutch
Improper linkage adjustment
Misaligned mainshaft
Insufficient chamfer on detent ball notches
Sliding gear tight on mainshaft splines

6. When transmission slips out of high gear, check for:

Improper linkage adjustment
Misaligned transmission
Insufficient on detent balls
Too much chamfer on detent ball notches
Worn clutch sleeve gear teeth
Worn pinion gear teeth

7. When transmission slips out of second gear, check for:

Improper linkage adjustment
Weak detent ball springs
Excessive chamfer on detent ball notch
Excessive end play of second gear on mainshaft
Worn second speed clutch gear teeth
Excessive clearance between second speed gear and mainshaft

8. When transmission slips out of first gear, check for:

Improper linkage adjustment
Worn shift lever lock ball notch

Too much chamfer on detent ball notch
Insufficient gear mesh
Excessive end play of reverse idler
Worn countershaft first speed gear
First and reverse sliding gear loose on mainshaft splines
Sliding gear teeth worn or tapered
Worn, misaligned mainshaft splines

9. When there is loss of lubricant, check for:

Lubricant level too high
Stopped up transmission breather
Damaged or improperly installed gaskets
Damaged or defective oil seals
Defective oil throw rings
Loose drain plug, transmission cover
Worn mainshaft bearings
Cracked transmission housing
Use of foaming lubricant

10. When transmission bearings fail prematurely, check for:

Use of wrong type, grade of lubricant
Lack of cleanliness in overhaul
Securing too tight or too loose bearing adjustments
Improper assembly of the unit
Improper shifting of gears
Excessive overloading of vehicle
Lugging of engine



Clutch

1. Check for clutch chattering resulting from:

Improper clutch adjustment
Oil or grease on facings
Glazed friction facings
Loose facings on driver plate
Uneven spring pressures
Damaged drive or driven plates
Bent clutch shaft or clutch plate
Binding pressure levers or release levers
Binding drive plate hub
Worn splines in transmission shaft
Loose universal joint flange
Improper alignment of transmission

2. Check for clutch grabbing resulting from:

Improper clutch adjustment
Oil or grease on facings
Loose engine mounts
Worn friction facings
Uneven spring pressures
Pressure plate binding on studs or pins
Binding release levers
Improper alignment of transmission with clutch

3. Check for clutch slipping resulting from:

Improper clutch adjustment
Oil or grease on facings
Binding clutch pedal
Insufficient free pedal travel
Warped clutch plates
Binding pressure or release levers
Worn friction facings
Weak, broken clutch pressure springs
Binding of driving pins in pressure plate holes
Improper alignment of clutch, engine, transmission
Driver riding clutch pedal

4. Check for clutch dragging caused by:

Improper clutch adjustment
Oil or grease in clutch
Improper pedal adjustment
Improper alignment
Dust or dirt in clutch

Worn, misaligned clutch facings
Clutch plate hub binding on shaft
Binding pilot bearing or bushing
Sticking release sleeve
Warped, damaged pressure plate

5. Check for clutch rattling caused by:

Improper alignment
Bent clutch shaft
Worn, dry clutch release sleeve
Unequal contact of pressure levers
Dry or worn pilot bearing or bushing
Worn release bearing
Worn parts in release assembly
Damaged clutch plate
Weak or broken release lever anti-rattle springs
Worn splines on clutch shaft or in plate hub
Worn driving pins in pressure plate
Excessive backlash in transmission or prop shaft
Worn transmission main drive gear bearing

6. Check for clutch squealing caused by:

Dry clutch pilot bushing
Lack of lubrication in release sleeve
Misalignment of clutch with engine
Bushings turning in crankshaft
Worn transmission main drive gear bearing

7. Check for clutch knocking caused by:

Play between pressure plate lugs and their guides
Worn release lever guide pins
Release levers striking clutch plate
Incorrectly installed metal baffle plate
End play in crankshaft

8. Check for clutch vibrating caused by:

Improper clutch assembly alignment
Bent clutch shaft
Improper fitting of pressure plate
Loose floating type clutch release sleeve
Pressure spring off center
Flywheel out of balance
Loose flywheel
Defective vibration dampener
Loose engine mountings
Worn universal joints
Worn transmission rear bearing
Loose emergency brake drum
Loose pinion bearing in rear end



Power Train

1. Check propeller shaft for:

a. Excessive vibration resulting from—

Improper alignment of flanges
Misaligned, sprung drive shaft
Worn needle bearings in cross
Worn splines on shaft or yoke
Loose U-joint flange nut
Improperly installed key on pinion
Too short propeller shaft
Worn torque tube bushing
Missing bolt in flange
Worn rear transmission bearing
Misaligned rear wheels
Shifted rear axle
Sprung frame

b. Excessive wear resulting from—

Improper lubrication
Too short shaft
Excessive and thrust
Overloading the vehicle
Careless braking

2. Check universal joints for:

a. Out of balance resulting from—

Excessive wear
Loose flange nut
Worn keyways
Incorrect key installation
Grease fitting interference

b. Breakage resulting from—

Overloading
Misaligned drive shaft
Misaligned rear axle
High angle drive
Weak rear springs
Erratic driving and braking

3. Check differential for:

a. Case breakage caused from—

Loose case bolts
Improper adjustment differential support bearings
Excessive ring gear and thrust block clearance
Erratic clutch operation
Vehicle overloading

b. Scoring of pinions, caused from—

Insufficient lubrication
Improper grade of lubricant
Excessive loads
Excessive spinning of one wheel

c. Tooth breakage, caused from—

Normal fatigue
Erratic clutch operation
Overloading
Ice-spotted pavements

d. Side gear broken at hub caused from—

Misaligned axle shaft
Worn thrust washers
Excessive axle housing deflection

e. Noisy operation caused from—

Insufficient lubricant
Unmatched ring gear and pinion
Worn teeth in ring gear or pinion
Improper ring gear and pinion adjustment
Loose differential side gear bearings
Misaligned, sprung ring gear
Loose differential housing bolts
Loose pinion bearings

f. Loss of lubricant caused from—

Lubricant level too high
Damaged bearing grease retainer
Defective rear wheel bearing gasket
Worn axle shaft grease retainers
Defective pinion oil seal
Restricted lubricant return passage
Scored, warped companion flange hub
Cracked rear axle housing
Too high wedges at spring seat

g. Overheating of unit, caused from—

Lubricant level too high
Use of incorrect grade of lubricant
Bearings adjusted too tightly
Misalignment of bearings
Insufficient ring gear to pinion gear clearance

4. Check rear axle for:

a. Axle breakage resulting from—

Normal fatigue
Grabbing clutch
Use of emergency brake to stop
Excessive speeds, rough roads
Misaligned axle shaft housing
Vehicle overloading
Improperly adjusted wheel bearings

b. Noisy operation, resulting from—

Bent, sprung axle shaft
Misaligned axle shaft housing
Wear in axle shaft housing sleeve
End play in pinion shaft bearings
Excessive gear lash
Improper adjustment pinion shaft bearings
Loose pinion companion flange
Scuffed gear tooth surfaces
Improper bearing adjustment

5. Check rear wheels for noise due to:

Wheel loose on axle shaft taper
Worn wheel or axle shaft keyways
Wheel hub or drum studs loose
Axle shaft rubbing wheel bearing retainer
Insufficient bearing lubrication
Scored wheel bearing cup or cone
Defective, brinelled wheel bearings
Excessive axle shaft end play



Steering

1. Check for hard steering conditions caused by:

Insufficient lubrication
Underinflation
Tight steering assembly
Worn steering gear
Too much caster
Excessive, positive or negative camber
Bent, worn king pin
Sprung spindle
Sagging, broken spring
Broken frame

2. Check for loose steering conditions caused by:

Worn steering linkage
Weak springs in drag link
Worn sector shaft bushing
Worn tie rod ends
Improper steering adjustment
Worn king pins, bushings

3. Check for wander or weave caused by:

Worn steering linkage
Unequal tire pressure
Sagging, broken springs
Loose spring shackles
Worn front wheel bearings
Tight steering assembly
Worn king pins, bushings
Incorrect toe-in adjustment
Insufficient caster
Loose U-bolts
Bent, broken frame
Overloading

4. Check for low speed shimmy caused by:

Too much caster
Loose king pins
Loose drag link arm
Loose steering gear
Misaligned drag link
Worn tie rod ends
Loose wheel bearings
Sagging, broken springs

5. Check for high speed shimmy caused by:

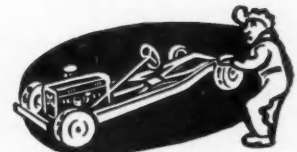
Underinflation—front tires
Unequal inflation
Loose engine mounting
Worn rear wheel bearings
Worn universal joint
Whipping propeller shaft
Wheel or tire wobble
Out-of-balance wheels
Eccentric tires
Broken, sagging springs
Worn shock absorbers

6. Check for road shock caused by:

Unequal caster
Excessive caster
Sprung front axle
Bent steering arm
Bent drag link
Weak springs
Improper tire size
Defective shock absorbers

7. Check for side pull caused by:

Unequal caster
Tight king pins
Unmatched tires
Uneven inflation
One weak rear spring
Sagging front springs
Bent steering knuckle
Bent, broken frame
Uneven braking



Tire Wear

1. Check tire factors causing premature tire wear:

Underinflation
Overinflation
"Bleeding" hot tires
Undersize tires for load
Neglected cuts and bruises
Duals mismatched for size
Duals—improper spacing
Duals mismatched for type of cord
Improper matching of inflation pressure in duals
Wrong type tire for job

2. Check vehicle factors causing premature tire wear:

Overloading
Improper loading
Excess overhang loads
Wheel misalignment
Wheels out of balance
Grabbing brakes
Unequalized brakes
Sprung or sagging axles
Sprung frame
Worn wheel bearings
Loose "U" bolts
Worn or loose wheel bearings
Bent rims
Broken springs
Improper placement of tandem axles

3. Check driving habits causing premature tire wear:

Quick starts and stops
Curb scraping and bumping
Excessive speed
"Squealing" tires on curves
Running over rocks
Parking on oily floors
Riding edge of pavement with soft, low shoulders
Improper brake application
"Spinning" tires in mud, slush

4. Check road conditions causing premature tire wear:

Abrasive road surfaces
Rutted roads
Highly crowned roads

5. Check other factors causing premature tire wear:

Atmospheric conditions
Storing tires exposed to sun
Storing tires exposed to oil
Failure to switch tires
Wrong size flap used
Loose tire chains
Foreign objects between duals

COMPONENT PARTS

For additional truck data see Specifications Table, Page 139; Bus Specifications Page 136

• KEY TO ABBREVIATIONS AND REFERENCES •

FOOTNOTES

- (1) Shuler and Eaton
- (2) Timken and Eaton
- (3) Shuler and Timken or Eaton
- (4) Shuler and Timken
- (5) Integral with carburetor
- (6) Loadmaster engine available as optional equipment
- (7) Delco-Remy distributor, Bosch magneto, on off-highway units; others, Delco-Remy
- (8) Delco-Remy starter, Electric Auto-Lite generator
- (9) Auto-Lite generator, Leece-Neville starter
- (10) Ensign KGNL or Zen. 63-AW-16
- (11) DeLuxe and Cuno
- (12) Any of these engines optional on any model
- (13) Continental, Hercules, Hall-Scott and Buda engines available in certain Sterling chassis
- (14) Integral with motor
- (15) Starter, D-B; Generator, AL
- (16) Warner or Clark

MAKES OF UNITS

A-B—American Bosch Corp.
 AL—Electric Auto-Lite Co.
 AM—Air Mase Corp.
 AmC—American Chain & Cable Co.
 AOS—A. O. Smith Co.
 Aub—Auburn Clutch Company
 A-W—Auto-Lite or Willard

B&B—Borg & Beck Div.
 BD—Budd or Dayton
 B-D-M—Budd, Dayton or Motor Wheel
 Bdd—Budd Wheel Company
 Ben—Bendix Products Div.
 B-K—Budd or Kelsey Hayes
 Bla—Blackstone Corp.
 Bid—Blood Bros. Machine Co.
 B-L—Brown Lipe (Spicer Mfg. Div.)
 B-M—Budd or Motor Wheel
 Bos—American Bosch Corp.
 Bud—Buda Co.
 BW—Bendix Westinghouse
 Car—Carter Carburetor Corp.
 C-B—Clark or Budd
 Cla—Clark Equipment Co.
 Con—Continental Motors Corp.
 CS—Cleveland Steel Products Co.
 Cum—Cummins Engine Co.
 Day—Dayton Steel Foundry Co.
 DD—Detroit Diesel
 DeL—DeLuxe Products Corp.
 Det—Detroit Steel Products Co.
 Dol—Dollinger Corp.
 Don—Donaldson Co.
 D-M—Dayton or Motor Wheel
 D-R—Delco-Remy Div.
 Eat—Eaton Mfg. Co.
 Ens—Ensign Carburetor Co.
 Eri—Erie Malleable Iron Co.
 Exi—Exide (Elec. Storage Battery Co.)
 Fed—Fedders-Quigan Corp.
 Frd—Ford Motor Co.
 Ful—Fuller Mfg. Co.

Gem—Gemmer Mfg. Co.
 GI—Globe-Union, Inc.
 GO—G & O Mfg. Co.
 G-H—Goodyear-Howley
 Han—Handy (King Seeley Corp.)
 Har—Harrison Radiator Div.
 Her—Hercules Motor Corp.
 Hof—Hoof Products Co.
 H-S—Hall-Scott Motor Car Co.
 Inl—Inland Mfg. Div.
 Jms—Jamestown Metal Equipment Co.
 KHM—Kelsey Hayes or Motor Wheel
 K-S—King Seeley Corp.
 Li—Liggett
 L-N—Leece Neville Corp.
 Long—Long Mfg. Div.
 L-R—Lipe Railway Corp.
 Lub—Luber-Finer, Inc.
 Mal—Mallory Electric Corp.
 Mar—Maremont Auto. Prod., Inc.
 Mat—Mather Spring Co.
 McC—McCord Radiator & Mfg. Co.
 Mic—Michiana Products Corp.
 Mid—Midland Steel Products Co.
 Mod—Modine Mfg. Co.
 Mur—Murray Corp. of America
 MW—Motor Wheel Corp.
 Nat—National Battery Co.
 NEP—New England Products
 NP—New Process Gear
 Nug—Wm. W. Nugent Co.
 Oak—Oakes North Chicago Div.
 Par—Parish (Spicer Mfg. Div.)
 Pce—Pierce Governor Co.

Pfx—Perflex Corp.
 P-G—Perflex or General Interchangeable
 Pur—Purulator Products, Inc.
 Ro—Ross Gear & Tool Co.
 Roc—Rockford Clutch Div.
 RP—Rochester Products
 Sag—Saginaw Steering Gear Div.
 Ser—Service Spring Co.
 Sol—Solar
 Spi—Spicer Mfg. Div.
 SS—Standard Steel Spring Co.
 Til—Tillotson Mfg. Co.
 Tim—Timken-Detroit Axle Co.
 T-S—Tru-Stop (Amer. Chain & Cable)
 Tut—Tuthill Spring Co.
 Uni—United Air Cleaner Div.
 UP—Universal Products Co.
 US—United States Spring & Bumper Co.
 Var—Various
 Vor—Vortex Mfg. Co.
 War—Warner Gear Div.
 Wau—Waukesha Motor Co.
 WCL—W. C. Lipe (Lipe Railway Corp.)
 WGB—W-G-B Oil Clarifier, Inc.
 Wil—Willard Storage Battery Co.
 Win—Winslow Eng. Co.
 Wyls—Willys Overland Motors, Inc.
 Yng—Young Radiator Co.
 Zen—Zenith Carburetor Div.

†—Core only ‡—Spicer 002068.
 *A.C. Mech. and Autopulse Dual
 **—Own-front universal joint
 *—Specifications same, Engine HRB600

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES						ELECTRICAL EQUIPMENT				CLUTCH Make and Model Number	UNIVER- SALS Make and Model Number	RUNNING GEAR					
		ENGINE Make and Model	Governor Make- (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBU- RETOR Make and Model Number	Fuel Feed System Make	Radiator Make	Ignition System Make	Generator—Starter Make	Battery—Make			STEERING GEAR Make and Model Number	Hand Brakes Make of Actuation	Brake Drum Make	Wheels— Make	Springs— Make	Frame— Make
BROCKWAY																			
1	88WH	Con 38B	Uni	Uni	Zen 63A12	AC	GO	AL	AL	Exi	LR 13 in.	Spi 1410	Ro TA14	War	Tim	Bdd	Est	Par	
2	128W	Con 40B	Uni	Uni	Zen 63A14	AC	GO	AL	AL	Exi	LR 13 in.	Spi 1410	Ro TA14	TS	Tim	Bdd	Eat	Par	
3	146W	Con 40B	KS	Uni	WGB Zen 63A14	AC	GO	AL	AL	Exi	LR 13 in.	Spi 1500	Ro TA66	TS	Tim	Bdd	Eat	Par	
4	148W	Con 42BX	KS	Uni	WGB Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spi 1500	Ro 151W-TA66	TS	Tim	Bdd	Eat	Par	
5	151W, 153W	Con 42BX	KS	Uni	WGB Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spi 1500	Ro TA71	TS	4	Bdd	Eat	Par	
6	152W	Con 42BX	Uni	Uni	WGB Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spi 1500	Ro TA71	TS	(1)	Bdd	Eat	Par	
7	154W(T)	Con 42BX	Uni	Uni	WGB Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spi 1500	Ro TA66	TS	(2)	Bdd	Eat	Par	
8	154WH(T)	Con 46B	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spi 1500	Ro TA66	TS	(2)	Bdd	Eat	Par	
9	240XW	Con 46B	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spi 1500	Ro TA71	TS	(1)	Bdd	Eat	Par	
10	260XW	Con 48B	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 15 in.	Spi 1600	Ro TA71	TS	(3)	Bdd	Eat	Par	
11	260XL	Con 48B	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 14 in.	Spi 1600	Ro TA71	TS	Tim	Bdd	Eat	Par	
12	260XWL	Con 48B	Uni	Mic	Zen 63AW16	AC	GO	AL	AL	Exi	LR 15 in.	Spi 1600	Ro TA71	TS	Tim	Bdd	Eat	Par	
BROWN																			
13	22RT	Con 22R	Pce	AM	Con Zen SF5	*	Pfx	DR	DR	Exi	LR 15ML-310†	Spi 1200	Ro TA71	Own	Eri	Eri	Mat	Par	
14	R6513T	Con 6513	(14)	AM	Con Zen 63AW16	*	Pfx	DR	DR	Exi	LR 15ML-310†	Spi 1200	Ro TA71	Own	Eri	Eri	Mat	Par	
15	R6572TC-TH, R6572TJ	Con 6572	(14)	AM	Con Zen 63AW16	*	PG	DR	DR	Exi	LR 15ML-295†	Spi 1200	Ro TA71	Own	Eri	Eri	Mat	Par	
16	140GKT	Wau 140GK	(14)	AM	Con Zen 63AW16	*	PG	DR	DR	AL	LR 15ML-295†	Spi 1200	Ro TA71	Own	Eri	Eri	Mat	Par	
17	HB600TJD	Cum HB600	(14)	Cum	Lub	Cum	PG	DR	DR	AL	LR 15ML-301	Spi 1200	Ro TA71	Own	Eri	Eri	Mat	Par	
18	HRB 600TJD, HRB600 TJD	Cum HRB600	(14)	Cum	Lub	Cum	PG	DR	DR	AL	LR 15ML-326	Spi 1200	Ro TA71	Own	Eri	Eri	Mat	Par	
19	NHB600TJD	Cum NHB600	(14)	Cum	Lub	Cum	PG	DR	DR	AL	LR 15ML-326	Spi 1200	Ro TA71	Own	Eri	Eri	Mat	Par	
CHEVROLET																			
20	HP, HR, HS	O-T/Master	AC	AC	RP-7002050	AC	Har	DR	DR	DR	Inl	Spi**	Sag	Own	BK	Own	Own	Own	
21	HT, HU	O-L/Master	AC	AC	Car-BB1-7455	AC	Har	DR	DR	DR	Inl	Spi**	Sag	Own	BK	Own	Own	Own	
22	TJ, TK	O-T/Master (6)	AC	AC	RP-7002050	AC	Har	DR	DR	DR	Inl	Spi	Sag	Own	BK	Own	Own	Own	
23	TL	O-T/Master (6)	Han	AC	RP-7002050	AC	Har	DR	DR	DR	Inl	Spi	Sag	Own	BK	Own	Own	Own	
24	TP(S), TR(S), TS(S)	O-L/Master	Han	AC	Car-BB1-7455	AC	Har	DR	DR	DR	Inl	Spi	Sag	Own	BK	Own	Own	Own	
25	TV(S), TW(S), TX	O-L/Master	Han	AC	RP-7002051	AC	Har	DR	DR	DR	Inl	Spi	Sag	Own	BK	Own	Own	Own	
CORBITT																			
26	G101	Con-M6330	Zen	Uni	Fram Zen-63AW12R	AC	Pfx	DR	DR	Exi	LR-Z30S	Spi-1500	Ro-TA66	Cla	Day	Day	Mar	Par	
27	G301	Con-B6371	Zen	Uni	Con Zen-29W12R	AC	Pfx	DR	DR	Exi	LR-Z30S	Spi-1600	Ro-TA66	Ful	Day	Day	Mar	Par	
28	G302	Con-B6427	Zen	Uni	Con Zen-29-14R	AC	Pfx	DR	DR	Exi	LR-Z31S	Spi-1600	Ro-TA66	Ful	Day	Day	Mar	Par	
29	G402	Con-T6427	Mal	Uni	Con Zen-29W16	AC	Pfx	DR	DR	Exi	LR-Z31S	Spi-1600	Ro-TA66	Ful	Day	Day	Mar	Par	
30	G601	Con-R6513	Con	Uni	Mic Zen-29W16	AC	Pfx	DR	DR	Exi	LR-Z42S	Spi-1700	Ro-TA70	Own	Day	Day	Mar	Par	
31	G602	Con-R6572	Con	Uni	Mic Zen-29W16	AC	Pfx	DR	DR	Exi	LR-Z42S	Spi-1700	Ro-TA70	Own	Day	Day	Mar	Par	
32	G603	Con-R6602	Con	Uni	Mic Zen-29W16	AC	Pfx	DR	DR	Exi	LR-Z40SX	Spi-1700	Ro-TA70	AmC	Day	Day	Mar	Par	
33	D202	Her-DJXH	Her	AM	Pur	AB	Pfx	DR	DR	Exi	LR-Z30S	Spi-1500	Ro-TA66	Cla	Day	Day	Mar	Par	
34	D401, D402 Eng., Her-DWXL	Her-DWXL	Her	AM	Pur	AB	Pfx	DR	DR	Exi	LR-Z31S	Spi-1600	Ro-TA66	Ful	Day	Day	Mar	Par	
35	D601	Her-DRXC	Her	AM	Pur	AB	Pfx	DR	DR	Exi	LR-Z42S	Spi-1700	Ro-TA70	Own	Day	Day	Mar	Par	
36	D801	Cum-HB600	Cum	Uni	Del	Cum	Pfx	DR	DR	Exi	LR-Z40SX	Spi-1700	Ro-TA71	AmC	Day	Day	Mar	Par	
37	D802	Cum-HRB600	Cum	Uni	Lub	Cum	Pfx	DR	DR	Exi	LR-Z40SX	Spi-1700	Ro-TA71	AmC	Day	Day	Mar	Par	

A Compilation of Standard Model Data

Submitted by Truck Manufacturers

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES					ELECTRICAL EQUIPMENT					RUNNING GEAR								
		ENGINE Make and Model	Governor Make (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBU- RETOR Make and Model Number	Fuel Feed System Make	Radiator Make	Ignition System Make	Generator—Starter Make	Battery—Make	CLUTCH Make and Model Number	UNIVER- SALS Make and Model Number	STEERING GEAR Make and Model Number	Hand Brakes Make of Actuation	Brake Drum Make	Wheels—Make	Springs—Make	Frame—Make	
38	CORBITT—(Cont.)																			
39	D803	Cum-NHB600	Cum	Uni	Lub		Cum	Pfx	DR	Exi	LR-Z40SX	Spi-1700	Ro-TA71	AmC	Day	Day	Mar	Par		
40	D808	Cum-HRBB600	Cum	Uni	Lub		Cum	Pfx	DR	Exi	LR-Z40SX	Spi-1700	Ro-TA71	AmC	Day	Day	Mar	Par		
41	CROSLLEY																			
42	Pickup Truck, Panel Delivery.	Own		Uni	Fram	Til DY-9C	AC	Yng	AL	AL	Sol	Cla1269-5A	Roc	Nep 6001	Ro S12	GH	Own	MW	Mat	Own
43	DIAMOND T																			
44	201, 306	Her QXLD	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B 10A7	Spi 1350	Ro660	War	Var	Cla	Own	Own	
45	222, 322	Her QXLD	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B 11A6	Spi 1350	Ro-TA14	War	Var	Cla	Own	Own	
46	404, 509SC	Her JXB	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B 11A6	Spi 1410	Ro-TA26	War	Var	Cla	Own	Own	
47	404SC	Her JXE	KS	Uni	Fram	Zen	AC	Own	AL	AL	Exi	B & B 11A6	Spi 1410	Ro-TA21	War	Var	Cla	Own	Own	
48	420	Her JXB	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B 11A6	Spi 1410	Ro-TA21	War	Var	Cla	Own	Own	
49	420	Her JXC	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B 11A6	Spi 1410	Ro-TA21	War	Var	Cla	Own	Own	
50	420	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	War	Var	Cla	Own	Own	
51	420	Her JXC-JXD	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B 11A6	Spi 1410	Ro-TA26	War	Var	Cla	Own	Own	
52	509SCH	Her JXC	KS	Uni	Fram	Zen	AC	Own	AL	AL	Exi	B & B 11A6	Spi 1410	Ro-TA26	Cla	Var	Cla	Own	Own	
53	520	Her JXC	KS	Uni	Wix	Zen	AC	Own	AL	AL	Exi	B & B 11A6	Spi 1410	Ro-TA21	War	Var	Cla	Own	Own	
54	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
55	520	Her JXLD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
56	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
57	520	Her JXLD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
58	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
59	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
60	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
61	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
62	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
63	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
64	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
65	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
66	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
67	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
68	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
69	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
70	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
71	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
72	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
73	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
74	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
75	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
76	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
77	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
78	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
79	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
80	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
81	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
82	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
83	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
84	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
85	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
86	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
87	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
88	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
89	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
90	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
91	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
92	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
93	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
94	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
95	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
96	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
97	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
98	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
99	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
100	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
101	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
102	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
103	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
104	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
105	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
106	520	Her JXD	Pce	Uni	Mic	Zen	AC	Own	AL	AL	Exi	B & B 12E	Spi 1410	Ro-TA21	Cla	Var	Cla	Own	Own	
107	520	Her JXD	Pce	Uni	Mic	Zen														

COMPONENT PARTS Continued from Page 113

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES						ELECTRICAL EQUIPMENT				CLUTCH Make and Model Number	UNIVER- SALS Make and Model Number	RUNNING GEAR						
		ENGINE Make and Model	Governor Make (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBU- RETOR Make and Model Number	Fuel Feed System Make	Radiator Make	Ignition System Make	Generator—Starter Make	Battery—Make			STEERING GEAR Make and Model Number	Hand Brakes Make of Actuation	Brake Drum Make	Wheels—Make	Spring—Make	Frame—Make	
111	FEDERAL—(Cont.)																			
112	645M Series	Con T6427F	KS	Don	Mic	Zen	AC	Lng	DR	DR	Exl	L-R 14 in.	Bld 1600	Gem 400	TS	BD	BD	Det	Par	
	663M, 664M Series	Con R6602	Con	Don	Mic	Zen	AC	Lng	DR	DR	Exl	L-R 15 in.	Bld 1700	Gem 500	.....	.....	Bdd	Det	Par
113	FORD																			
114	F-1, F-2, F-3, F-4, F-5, F-6, F-7, F-8	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	Own	
115	FREIGHTLINER																			
	A-64, B-42 (Engine, HRB600)	Cum NHB600	Vor	Lub				Own	DR	AL	LR 15 in. DP	Spi 1700	Gem 500	TS	Own	Bdd	Own	Par		
116	FWD																			
117	H6X6	Wau,MZA	Don	Mic	Zen	IN167SJ	AC	Own	DR	DR	Wil	Own LR-H14	Bld 5N	Ro TA66	Own	Own	Own	Own	Own	
118	HA	Wau BZ	Wau	AM	Mic	Zen 29BU16	AC	Own	DR	AL	Wil	Own LRH	Bld 5N	Ro TA66	Own	Own	Own	Own	Own	
119	HG, HR, HRT	Wau BZA	Wau	Uni	Mic	Zen IN167SJ	AC	Own	DR	AL	GI	B-811A6	Bld 5N	Ro TA66	Own	Own	Own	Own	Own	
120	M6X6	Her QXLD3	Wau	AM	Mic	Car BBRI-769S	AC	Own	DR	DR	Wil	Own LR-M15	Spi 1410	Ro TA14	AmC	Tim	Bdd	Own	Own	
121	M6X6D	Wau 145GK	Wau	AM	DeL	Zen W16	Bud	Own	DR	DR	Wil	Own LR-M15	Bld 7N	Ro P720	AmC	Tim	Bdd	Own	Own	
122	M7, M10	Bud 844	Wau	AM	Mic	Zen W16	Own	Own	DR	DR	Wil	Own LR-M15	Bld 7N	Ro P720	Own	Tim	Bdd	Own	Own	
123	M7D, M10D	Wau 145GK	Wau	AM	DeL	Zen W16	Bud	Own	DR	DR	Wil	Own LR-M14	Bld 7N	Ro P720	Own	Tim	Bdd	Own	Own	
124	MU6X6	Bud 844	Wau	AM	Mic	Zen W16	Own	Own	DR	DR	Wil	Own M15	Bld 6N	Ro TW74	Own	Own	Own	Own	Own	
125	SU	Wau 145GK	Wau	AM	Mic	Zen IN167SJ	AC	Own	DR	AL	Wil	Own LR-U14	Bld 6N	Ro TW74	Own	Own	Own	Own	Own	
126	YU	Wau SRKR	Wau	Don	Mic	Zen 29-14	AC	Own	DR	DR	Wil	Own LR-U15	Bld 6N	Ro TW74	Own	Own	Own	Own	Own	
127	ZU	Wau 140GK	Wau	Don	Mic	Zen 29-16	AC	Own	DR	DR	Wil	Own LR-U15	Bld 5N	Ro TW74	Own	Own	Own	Own	Own	
128	KENWORTH																			
	521, 522, 523, 524, 548, 552, 584, 825	Cum HB600	Cum	Don	Cum		Cum	Pfx	DR	Exl	B-L 14 Sngl.	Spi 1700	Gem 500	T-S	Tim	Bdd	Own	Own	Own	
129	585, 829	Wau 140GZB	Wau	Don	Mic	Zen 29W16	AC	Pfx	DR	Exl	B-L 14 Sngl.	Spi 1700	Gem 500	T-S	Tim	Bdd	Own	Own	Own	
130	888	Cum-NHB600	Cum	Don	Cum		Cum	Pfx	DR	Exl	B-L 14 Sngl.	Spi 1700	Gem 500	T-S	Tim	Bdd	Own	Own	Own	
131	LINN																			
132	Linn L2, L4	Her QXC3	Don	Dol		Zen 63AW10	AC	GO	AL	AL	AL	LR 12ML	UP	Sag 630-061	NP	Eri	Bdd	Tut	Own	
133	Linn L6, L8	Her JXE3	Don	Dol		Zen 63AW10	AC	GO	AL	AL	AL	LR 12ML	UP	Sag 630-061	NP	Eri	Bdd	Tut	Own	
134	Linn A15, A25	Her JXE3	Hof	Dol		Zen 63AW10	AC	Yng	AL	AL	AL	LR 12ML	UP 5360	Ro TA26	NP	Eri	Bdd	Li	Own	
	Linn A35, A45	Her JXC	Hof	Dol		Zen 63AW10	AC	Yng	AL	AL	AL	LR 12ML	UP 5360	Ro TA26	NP	Eri	Bdd	Li	Own	
135	MARMON-HERRINGTON																			
	DVL4	Wye CJ-2A	Hof	Uni	Fram	Car 596S	AC	Yng	AL	DR	AL	B&B	Spi 1350	Ro TA15030	Own	Own	Bdd	Ser	.....
136	LDZ, R3, R4, R5, R6, R5-6, R6-6	Frd 8RT (239)	Frd	Frd	Frd	Frd	AC	Frd	Frd	Frd	Frd	Frd	.....	.....	Own	Own	Bdd	Frd	Frd
137	Q5, Q6, Q5-6, Q6-6	Frd 8EQ (337)	Frd	Frd	Frd	Frd	AC	Frd	Frd	Frd	Frd	Frd	.....	.....	Own	Own	Bdd	Frd	Frd
138	MH440-4, MH440-6	Her WXL3C	KS	Don	Mic	Zen 28	AC	Yng	DR	DR	AL	BL Z32S	Spi 1500	Ro TA71	AmC	Tim	Bdd	SS	Own	
139	MH555-4, MH555-6	Her RXC	KS	Don	Mic	Zen 29	AC	Yng	DR	DR	AL	BL Z31S	Spi 1500	Ro TA71	AmC	Tim	Bdd	SS	Own	
140	MH-RH	Her-RXLDH	Pce	Don	Mic	Zen 29W16	AC	Yng	(15)	(15)	.....	BL-Z31S	Spi 1500	Ro TA71	AmC	Tim	Bdd	SS	Own
141	MH-RC	Her-RXC	Pce	Don	Mic	Zen 29W16	AC	Yng	(15)	(15)	.....	BL-Z32S	Spi 1500	Ro TA71	AmC	Tim	Bdd	SS	Own
142	MILFORD																			
143	QX	Wau 6MZA	Wau	AM	Mic	Zen 63AW12	AC	Pfx	DR	DR	Exl	L-R 14ML	Bld 6N	Ro TA71	AmC	Tim	Bdd	Tut	Par	
	QY	Wau 140GK	Wau	Vor	Mic	Zen 63AW16	AC	Pfx	DR	DR	Exl	L-R 15ML	Bld 6N	Ro TW74	AmC	Tim	Bdd	Tut	Par	
144	OSHKOSH																			
145	W212	Her JXLD	Pce	Don	Mic	Zen 29AW14	AC	Yng	DR	AL	Wil	LR 13SP	Spi 1500	Ro TA66	Own	Own	Bdd	Tut	Par	
146	W312	Her WXLCO3	Pce	Don	Mic	Zen 29AW14	AC	Pfx	DR	DR	Wil	LR 14SP	Spi 1500	Ro TA71	Own	Own	Bdd	Tut	Par	
147	W700	Her RXCO	Pce	Don	Mic	Zen 29AW14	AC	Pfx	DR	DR	Wil	LR 14SP	Spi 1600	Ro TA71	Own	Own	Bdd	Tut	Par	
148	W703, W705	Her RXLD	Pce	Don	Mic	Zen 29AW14	AC	Pfx	AL	DR	Wil	LR 14SP	Spi 1600	Ro TA71	Own	Own	Bdd	Tut	Par	
149	W703D	Her DRXC	Bos	Don	Pur		Bos	Pfx	(8)	Wil	LR 14SP	Spi 1600	Ro TA71	Own	Own	Bdd	Tut	Par		
150	W703-6X6	Her RXLD	Pce	Don	Mic	Zen 29AW14	AC	Pfx	AL	DR	Wil	LR 14SP	Spi 16, 1700	Ro TA71	Own	Own	Bdd	Tut	Par	
151	W712	Her RXLDH	Pce	Don	Mic	Zen 29D13	AC	Pfx	AL	DR	Wil	LR 15SP	Spi 1600	Ro TA71	Own	Own	Bdd	Tut	Par	
152	W906	Cum HB600	Cum	Don	Cum		Cum	Pfx	DR	DR	Wil	LR 15SP	Spi 1700	Ro P720	Own	Own	Bdd	Tut	Par	
153	W906R	Cum HB600	Cum	Don	AM		Cum	Pfx	DR	DR	Wil	LR 15SP	Spi 1700	Ro P720	Own	Own	Bdd	Tut	Par	
154	W1600BD	Bud 6DC844	Bos	Don	DeL	(10)	Bos	Pfx	DR	DR	Wil	LR 15SP	Spi 17, 1800	Ro TA71	Own	Own	Bdd	Tut	Par	
155	W1600BG	Bud 6MO893	Pce	Don	DeL	(10)	AC	Pfx	(7)	DR	DR	Wil	LR 15SP	Spi 17, 1800	Ro TA71	Own	Own	Bdd	Tut	Par
156	W1600CD	Cum HB600	Cum	Don	Cum		Cum	Pfx	DR	DR	Wil	LR 15SP	Spi 17, 1800	Ro TA71	Own	Own	Bdd	Tut	Par	
157	W1700	Her RXC	Pce	Don	Mic	Zen 29AW14	AC	Pfx	DR	DR	Wil	LR 14SP	Spi 1600	Ro TA71	Own	Own	Bdd	Tut	Par	
158	W2200	Bud 6MO779	Pce	Don	DeL	Zen 63AW16	AC	Pfx	DR	DR	Wil	LR 15SP	Spi 1700	Ro TA71	Own	Own	Bdd	Tut	Par	
159	W2201	Bud 6MO893	Pce	Don	DeL	Zen 63AW16	AC	Pfx	DR	DR	Wil	LR 15SP	Spi 1700	Ro TA71	Own	Own	Bdd	Tut	Par	
160	W2204	Bud 6DC844	Bos	Don	DeL	(11)	Bos	Pfx	DR	DR	Wil	LR 17SP	Spi 1700	Ro TA71	Own	Own	Bdd	Tut	Par	
161	W2205	Bud 6DC844	Bos	Don	DeL	(11)	Bos	Pfx	DR	DR	Wil	LR 17SP	Spi 1700	Ro TA71	Own	Own	Bdd	Tut	Par	
162	W2206	HS 400	HS	Don	HS	Zen 1501MW2	Cum	Pfx	DR	(9)	DR	Wil	LR 152P	Spi 1700	Ro TA71	Own	Own	Bdd	Tut	Par
163	W2208	Cum NHB600	Cum	Don	AM		Cum	Pfx	DR	DR	Wil	LR 152P	Spi 1700	Ro TA71	Own	Own	Bdd	Tut	Par	
164	W2209	CumNHB600	Cum	Don	AM		Cum	Pfx	DR	DR	Wil	LR 152P	Spi 1700	Ro TA71	Own	Own	Bdd	Tut	Par	
165	PETERBILT																			
	280, 350, 360, 370, 380	Cum HB600	Cum	Don	Cum		Cum	Pfx	DR	DR	BL 13, 14DP	Spi 1700	Ro TA71	TS	Tim	Bdd	US	Par	Par	
166	390	Cum HB600	Cum	Don	Cum		Cum	Pfx	DR	DR	BL 13, 14DP	Spi 17, 1800	Ro TA71	TS	Tim	Bdd	US	Par	Par	
167	REO																			
168	E19	Own GC245	KS	Uni	Fram	Zen 28BV11	AC	Fed	DR	DR	Wil	BB 11A6	Spi 1410	Ro TA14	Own	Own	DM	SS	Own	
169	E21	Own OA292	KS	Uni	Fram	Zen 28ADA10	AC	Mod	DR	DR	Wil	Lng 12CF	Spi 1410	Ro TA14	Own	Own	DM	SS	Own	
170	E22, E226	Own OA331	KS	Uni	Fram	Zen 28ADA10	AC	Mod	DR	DR	Wil	Lng 12CF	Spi 1500 Ser	Ro TA26	Own	Own	DM	SS	Own	
171	E23, E236	Con T6427	Hof	AM	Fram	Zen 29W16	AC	Mod	DR	DR	Wil	WCLZ32S	Spi 1600 Ser	Gem 400	Cia	DM	SS	Own		
	30, 316	Con R6513	Con	AM	Fram	Zen 29W16	AC	Mod	DR	DR	Wil	Roc 15TT	Spi 1700	Ro TA71	Spi	DM	SS	Own	Own	
	31	Con R6602	Con	AM	Fram	Zen 29W16	AC	Mod	DR	DR	Wil	Roc 15TT	Spi 1700	Ro TA71	Spi	DM	SS	Own	Own	
172	STERLING																			
173	HD87, HD105, HA1401	Wau 6MZA	Wau	Don	DeL	Zen IN167SJ	AC	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600	Ro TA71	Own	Tim	Bdd	Mar	Par	
174	DD115, HD115, HD145	Wau 6SRKR	Wau	Don	DeL	Zen IN167SJ	AC	Mod	DR	DR	Nat	LR 14 in. SP	Spi 1600	Ro TA71	Own	Tim	Bdd	Mar	Par	
175	DD145	Wau 145GK	Wau	Don	DeL	Zen 29-16	AC	Mod	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par	
176	HD115H, HD145H	Cum HB600	Cum	Don	Cum		Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Bdd	Mar	Par	
177	DD145H	Cum HB600	Cum	Don	Cum		Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spi 1700	Gem 550	Own	Tim	Bdd	Mar	Par	
178	HC97, HC105	Wau 6MZA	Wau	Don	DeL	Zen IN167SJ	AC	Mod	DR	DR	Nat	LR 14 in. SP	Bld 60N	Ro TA71	Own	Tim	Bdd	Mar	Par	
179	HC115, HC144, HC147, HC155	Wau 6SRKR	Wau	Don	DeL	Zen IN167SJ	AC	Mod	DR	DR	Nat	LR 14 in. SP	Bld 60N	Ro TA71	Own	Tim	Bdd	Mar	Par	
180	HC175, HC250	Wau 145GK	Wau	Don	DeL	Zen 29-16	AC	Yng	DR	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Day	Mar	Par	
181	HC115H	Cum HB600	Cum	Don	Cum		Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spi 1700	Ro TA71	Own	Tim	Day	Mar	Par	
182	HC175H, HC250H	Cum HBD600	Cum	Don	Cum		Cum	Yng	DR	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Day	Mar	Par	

TRAILER REGISTRATIONS

1948-1949

State	1949		1948	
	House or Tourist	Com- mercial	Total—All Trailers	Total—All Trailers
Alabama.....		9,075	9,075	8,557
Arizona.....			21,011	19,693
Arkansas.....	337 (a)	17,058 (a)	17,395 (a)	26,258
California.....	79,395	276,180	355,575	360,496
Colorado.....			19,842	17,113
Connecticut.....	13,531	5,754	19,285	19,493
Delaware.....			3,705	3,041
Dist. of Col.....			1,576	1,505
Florida.....	77,031	21,118	98,149	70,734
Georgia.....	17,500	12,000	29,500	27,071
Idaho.....			32,607	34,774
Illinois.....				6,114
Indiana.....	8,000	34,643	42,643	40,000
Iowa.....			141,122	134,169
Kansas.....			17,374	16,415
Kentucky.....				
Louisiana.....	1,900	33,178	35,078	30,270
Maine.....			18,309	17,974
Maryland.....			14,000	15,336
Massachusetts.....			48,138	46,417
Michigan.....	15,007	215,078	230,085	228,389
Minnesota.....	21,481	36,793	58,274	105,670
Mississippi.....	11,371	7,238	18,609	17,451
Missouri.....			82,000	79,260
Montana.....			6,659	6,148
Nebraska.....	4,075	7,764	11,839	10,250
Nevada.....			4,229	4,405
New Hampshire.....			9,466	9,248
New Jersey.....			23,867	23,984
New Mexico.....				5,541
New York.....			105,005	105,202
North Carolina.....			73,601	73,017
North Dakota.....	1,732	268	2,000	1,880
Ohio.....			189,976	187,650
Oklahoma.....	2,017	10,864	12,881	12,014
Oregon.....	10,175	11,260	21,435	19,475
Pennsylvania.....			83,043	81,885
Rhode Island.....			3,870	3,696
South Carolina.....			11,056	10,244
South Dakota.....			31,238	32,638
Tennessee.....			97,041	
Texas.....			117,000	97,588
Utah.....			1,520	1,550
Vermont.....			5,955	5,558
Virginia.....	21,773	10,300	32,073	30,757
Washington.....			57,963	58,024
West Virginia.....	7,624	1,414	9,038	8,647
Wisconsin.....	4,101	9,236	13,337	12,664
Wyoming.....			14,619	13,600
Total.....			2,250,083	2,141,845

(a)—Six months registration period only. Compiled by Commercial Car Journal from material secured direct from the motor vehicle commissioners of the various states.

TRAILER PRODUCTION

by Type, by Year*

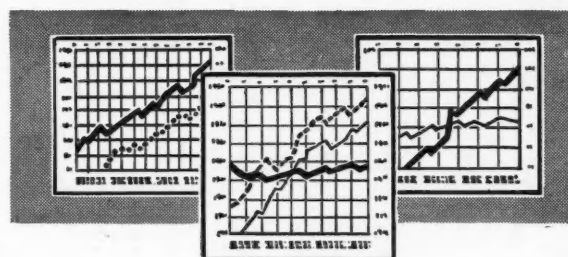
	Eight Months		Total 1948	Total 1947
	1949†	1948		
Vans				
Insulated and Refrigerated	1,631	1,470	2,277	1,852
Furniture.....		376	546	1,185
All Other Closed Top.....	8,340	11,835	18,366	18,601
Open Top.....	896	1,273	2,002	1,616
Total Vans.....	10,867	14,954	23,191	23,254
Platforms				
With Cattle & Stake Racks	554	1,073	1,590	3,369
With Grain Bodies.....	201	373	586	1,271
All Other.....	3,435	3,279	5,330	7,915
Total Platforms.....	4,190	4,725	7,506	12,555
Tanks				
Petroleum.....	1,257	2,219	3,176	3,019
All Other.....		270	374	411
Total Tanks.....	1,257	2,489	3,550	3,430
Pole and Logging				
Single Axle.....	496	1,592	2,059	3,815
Tandem Axle.....	496	1,269	1,605	1,541
Total.....	962	2,861	3,664	5,356
Low-bed Heavy Haulers.....	986	1,256	1,825	2,405
Off-Highway.....		529	669	808
Dump Trailers.....	268			622
All Other Trailers.....	1,355	2,028	2,469	1,365
Total Trailers.....	19,885	28,842	42,874	49,795
Trailer Chassis.....	939	1,422	1,952	3,301
Total—Trailers and Chassis..	20,824	30,264	44,826	53,096

*—Industry Division, Bureau of the Census. †—Latest available data.

SECTION

2

NINETEEN - FIFTY FLEET OPERATORS REFERENCE ANNUAL



INDUSTRY STATISTICS

PRODUCTION

Trailers	115
Trucks	116-117
Buses	116

TOTAL REGISTRATIONS

Trailers	115
Trucks	119-120

NEW REGISTRATIONS

Trucks	117-118
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OTHER DATA

See Index	2
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U. S. TRUCK PRODUCTION by MAKES—1947-1949

(Official Figures Submitted by Manufacturers)

AUTOCAR

G. V. W.	1949	1948	1947
Over 26,000	1,458	2,823	5,098

BROCKWAY

	1949	1948	1947
	1,622	2,919	4,742

CHEVROLET

(Total Truck Production)

G. V. W.	1949	1948	1947
Under 5,000 (sedan delivery)	10,041	20,039	20,476
Under 5,000 (1½-ton)	182,663	113,446	76,940
5,001-10,000 (¾ & 1)	91,861	79,555	49,336
10,001-14,000 (1½-ton)	24,689	35,600	25,235
14,001-16,000 (2-ton)	44,089	78,922	92,907

Total for Domestic Distribution	353,373	327,562	264,894
Total for Export	30,169	62,128	70,449

Total Production (U. S. Plants)	383,542	389,690	335,343
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FEDERAL

G. V. W.	1949	1948	1947
10,001-14,000	64	1,340	2,495
14,001-16,000	167	640	3,085
16,001-19,500	543	592	1,233
19,501-26,000	689	1,165	2,765
Over 26,000	206	161	480
Total	1,649	3,898	10,058

OSHKOSH

G. V. W.	1949	1948	1947
19,501-26,000	12	27	60
Over 26,000	192	204	268
Total	204	231	328

REO

G. V. W.	1949	1948	1947
14,001-16,000	1,198	7,833	12,041
16,001-19,500	1,804	2,583	6,784
19,501-26,000	284	420	1,516
Over 26,000	14	58	8
Total	3,300	10,894	20,349

STUDEBAKER

	1949	1948	1947
	63,473	67,982	67,611

FORD

(U. S. Factory Sales of Trucks)

G. V. W.	1949	1948	1947
5,000 and less	111,210	110,818	67,377
5,001-10,000	43,358	47,520	29,614
10,001-14,000	24,501	52,551	86,851
14,001-16,000	31,528	62,556	57,073
16,001-19,500	4,114	14,446	60
19,501-26,000	4,008	10,735	72
Total	218,719	298,626	241,047

F.W.D.

G. V. W.	1949	1948	1947
16,001-19,500	88	121	1,310
19,501-26,000	145	385	793
Over 26,000	272	571	
Total	505	1,077	2,103

G.M.C.

G. V. W.	1949	1948	1947
5,000 and less	39,596	24,410	14,308
5,001-10,000	20,070	16,848	10,936
10,001-14,000	8,782	20,237	18,181
14,001-16,000	7,944	13,108	5,441
16,001-19,500	3,598	11,740	5,679
19,501-26,000	1,501	3,269	3,356
Over 26,000	2,349	3,085	4,015
Total	83,840	92,677	61,918

INTERNATIONAL

G. V. W.	1949	1948	1947
5,000 and less	18,368	26,486	24,634
5,001-10,000	38,306	41,861	38,364
10,001-14,000	1,718	39,948	40,703
14,001-16,000	33,154	18,945	18,694
16,001-19,500	10,016	19,523	17,475
19,501-26,000	6,526	15,377	9,172
Over 26,000	2,470	4,644	5,967
Total	110,558	166,784	153,009

WHITE

	1949	1948	1947
Commercial	8,707	12,507	18,479
Export*	(1,329)	(1,135)	(2,131)
Canada	868	549	948
Bus	216	743	1,086
Total	9,791	13,799	20,513

WILLYS

	1949	1948	1947
CJ-2A Jeeps		62,861	77,958
CJ-3A Jeeps	31,595	309	
4-63 Panel	4,809	11,488	899
2-WD Trucks	4,139	8,859	3,734
4-WD Trucks	9,430	21,114	4,115
Total	49,973	104,631	86,706

46 YEARS OF TRUCK AND BUS PRODUCTION*

Truck and Bus Factory Sales in Units and Their Value

Year	Units	Wholesale Value	Average Wholesale Price
1904	700	\$1,272,747	\$1,818
1905	750	1,330,000	1,773
1906	800	1,440,000	1,800
1907	1,000	1,780,000	1,780
1908	1,500	2,550,000	1,700
1909	3,297	5,333,683	1,618
1910	6,000	9,680,000	1,610
1911	10,681	21,000,000	1,966
1912	22,000	43,000,000	1,954
1913	23,500	44,000,000	1,872
1914	24,900	44,219,096	1,776
1915	74,000	125,800,000	1,700
1916	92,130	161,000,000	1,747
1917	128,157	220,982,668	1,724
1918	227,250	434,168,992	1,910
1919	224,731	371,422,820	1,653
1920	321,789	423,249,410	1,315
1921	148,052	166,070,810	1,122
1922	269,991	226,049,658	837
1923	408,295	308,537,929	754
1924	416,659	318,580,580	765
1925	530,659	458,400,277	864
1926	616,947	452,123,435	876
1927	464,793	420,130,624	904
1928	543,324	437,132,258	804
1929	771,020	566,029,644	734
1930	571,241	389,436,690	682
1931	416,648	262,417,542	630
1932	235,187	136,193,336	579
1933	346,545	186,069,314	537
1934	575,192	320,143,667	557
1935	694,690	379,407,751	546
1936	784,587	462,820,474	590
1937	893,085	534,494,873	598
1938	488,100	334,147,530	685
1939	710,496	494,829,231	696
1940	754,901	567,820,414	752
1941	1,060,820	1,069,799,855	1,008
1942	819,662	1,427,456,801	1,744
1943	699,689	1,451,794,475	2,076
1944	737,524	1,700,928,939	2,306
1945	655,683	1,181,955,532	1,803
1946	940,851	1,043,247,276	1,109
1947	1,239,642	1,708,622,000	1,378
1948	1,376,155	1,858,210,000	1,350
1949	1,129,303	1,433,000,000	1,269
46 Years	20,362,926	22,208,060,331	1,091

*—Automobile Manufacturers Association.

BUS DELIVERIES*

By Type (From U. S. Plants)

City Coaches			
Year	Domestic	Foreign	Total
1946	6,842	699	7,541
1947	11,799	1,821	13,620
1948	6,971	1,267	8,238
1949	3,402	398	3,800
Intercity Coaches			
Year	Domestic	Foreign	Total
1946	2,276	107	2,383
1947	3,451	500	3,951
1948	2,558	468	3,026
1949	690	165	855
Special Coaches†			
Year	Domestic	Foreign	Total
1946	159	7	166
1947	1,400	139	1,539
1948	997	36	1,033
1949	802	54	856
Total All Coaches			
Year	Domestic	Foreign	Total
1946	9,277	813	10,090
1947	16,650	2,460	19,110
1948	10,526	1,773	12,299
1949	4,894	617	5,511

†—Includes Integral School Buses.

*—Automobile Manufacturers Association. Does not include Non-Integral School Buses.

TRUCK FACTORY SALES by Gross Vehicle Weights*

Total Factory Sales from U. S. Plants

	5,000 lbs. and less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
1949	511,738	278,612	83,391	172,009	37,078	23,613	17,351	1,123,792
Per Cent of Total	45.54	24.79	7.42	15.31	3.30	2.10	1.54	100.00%
1948	485,088	267,720	182,500	280,535	76,711	50,023	21,279	1,363,856
Per Cent of Total	35.57	19.63	13.38	20.57	5.62	3.67	1.56	100.00%
1947	375,445	182,490	265,989	285,589	41,606	42,761	26,754	1,220,634
Per Cent of Total	30.76	14.95	21.79	23.40	3.41	3.50	2.19	100.00%
1946	330,730	88,235	247,912	200,574	24,182	25,282	13,874	930,739
Per Cent of Total	35.53	9.48	26.64	21.55	2.60	2.71	1.49	100.00%

Factory Sales for Domestic Use

	5,000 lbs. and less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	Over 26,000	Total
1949	469,255	258,035	70,989	135,604	28,396	19,780	15,569	997,608
Per Cent of Total	47.02	25.86	7.12	13.69	2.86	1.98	1.56	100.00%
1948	420,531	244,894	150,340	217,695	64,297	45,120	19,712	1,162,589
Per Cent of Total	36.17	21.06	12.93	18.73	5.53	3.88	1.70	100.00%
1947	314,662	165,707	197,275	198,705	34,660	36,723	23,873	971,605
Per Cent of Total	32.39	17.05	20.30	20.45	3.57	3.78	2.46	100.00%
1946	291,827	78,925	182,000	137,054	19,293	22,474	13,058	744,631
Per Cent of Total	39.19	10.60	24.44	18.41	2.59	3.02	1.75	100.00%

*—Automobile Manufacturers Association.

TRUCK PRODUCTION

By Makes, 1947-1949

	1949	1948	1947
Autocar	1,458	2,823	5,098
Brockway	1,622	2,819	4,742
Chevrolet	383,542	389,690	335,343
Federal	1,649	3,898	10,058
Ford	218,719	298,626	241,047
F.W.D.	505	1,077	2,103
G.M.C.	83,840	92,677	61,918
International	110,558	166,784	153,009
Oshkosh	204	231	328
Reo	3,300	10,894	20,349
Studebaker	63,473	67,982	67,811
White	9,791	13,799	20,513
Willys	49,973	104,631	86,708
Total	928,634	1,156,031	1,009,025

U. S.

TRUCK PRODUCTION*

By Months, by Years

	1949	1948	1947
January	104,599	100,582	101,091
February	101,700	108,155	106,345
March	115,171	142,036	119,655
April	106,212	130,019	108,634
May	86,200	113,077	99,283
June	99,126	118,640	93,248
July	95,348	117,792	99,561
August	99,650	112,531	88,251
September	81,389	112,367	112,327
October	84,704	108,048	120,032
November	72,749	104,382	89,027
December	66,744	108,526	103,188
Total	1,123,792	1,376,155	1,239,642

	1946	1945	1944
January	45,500	67,394	58,827
February	35,258	64,510	55,916
March	38,193	75,057	56,695
April	81,719	67,579	56,071
May	76,162	71,267	57,287
June	60,812	66,456	61,479
July	88,453	54,563	61,921
August	98,948	44,779	69,015
September	96,515	31,572	65,605
October	108,141	42,225	64,723
November	102,075	53,634	69,497
December	109,054	29,542	72,165
Total	940,830	668,578	749,201

	1943	1942	1941
January	49,612	93,181	86,436
February	47,546	77,269	87,824
March	55,979	89,537	94,106
April	56,173	64,157	85,395
May	55,190	61,064	97,115
June	56,516	73,732	97,884
July	60,285	63,885	97,877
August	61,321	59,526	65,383
September	57,582	59,857	68,460
October	60,160	56,743	81,478
November	57,168	31,628	93,128
December	59,583	54,685	105,734
Total	677,115	805,264	1,080,820

*—W.P.B. records for 1942 through 1945. Automobile Manufacturers Association 1946 through 1949.

Revenue Bus Factory Sales

From U. S. Plants*

	1949	1948	1947
January	658	1,382	1,273
February	418	1,101	1,303
March	545	1,430	1,421
April	514	1,056	1,850
May	564	1,288	1,853
June	632	1,068	1,828
July	439	1,012	1,806
August	444	771	1,765
September	298	1,143	1,607
October	322	679	1,667
November	308	545	1,416
December	369	824	1,721
Total	5,511	12,299	19,110

	1946	1944	1941
January	447	231	430
February	285	245	456
March	527	336	682
April	948	352	603
May	789	367	701
June	774	293	609
July	862	381	650
August	1,067	470	627
September	833	563	748
October	975	594	615
November	1,146	484	573
December	1,438	1,483	952
Total	10,091	5,799	7,626

*—Automobile Manufacturers Association.

INDUSTRY STATISTICS

NEW TRUCK REGISTRATIONS*

by MAKES, by G.V.W.—1947-1949

	5,000 lb. and less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	26,001 and over	Total
AUTOCAR	1949	.....	.....	.....	.....	.....	1,655	1,655
1948	.....	.....	.....	.....	.....	.....	2,770	2,770
1947	.....	.....	.....	.....	.....	.....	4,334	4,334
BROCKWAY	1949	.....	.....	166	128	631	701	1,626
1948	.....	.....	.....	370	239	1,606	743	2,958
1947	.....	.....	.....	574	120	2,437	1,124	4,255
CHEVROLET	1949	179,489	89,622	26,890	49,518	.....	.....	345,519
1948	124,669	72,143	32,651	72,756	.....	.....	.....	302,219
1947	87,648	40,252	25,888	82,015	.....	.....	.....	235,803
CROSLEY	1949	871	.....	.....	.....	.....	.....	871
1948	2,411	.....	.....	.....	.....	.....	.....	2,411
1947	.....	.....	.....	.....	.....	.....	.....	.....
DIAMOND T	1949	.....	1,025	1,507	1,217	521	349	5,172
1948	.....	1,115	3,779	3,530	1,128	704	403	10,657
1947	.....	945	2,643	4,704	1,271	390	522	10,475
DIVCO	1949	.....	3,168	409	.....	.....	.....	3,577
1948	.....	4,678	940	.....	.....	.....	.....	5,618
1947	.....	3,636	1,257	.....	.....	.....	.....	4,893
DODGE	1949	52,866	32,398	50	20,945	9,482	1,212	116,956
1948	42,097	28,710	978	29,777	11,377	1,492	.....	114,431
1947	36,719	32,138	35,407	17,772	3,014	1,686	.....	126,736
FEDERAL	1949	.....	60	467	266	357	75	1,225
1948	.....	625	1,981	396	821	203	.....	4,026
1947	.....	1,068	3,143	213	997	599	.....	6,020
FORD	1949	99,044	35,909	30,387	25,901	6,795	4,143	202,179
1948	79,616	50,287	51,140	31,047	10,717	2,922	.....	225,729
1947	46,365	33,533	85,057	21,459	.....	.....	.....	186,414
F. W. D.	1949	.....	.....	.....	27	227	83	337
1948	.....	.....	.....	.....	64	609	138	811
1947	.....	.....	.....	.....	140	699	356	1,195
G. M. C.	1949	34,431	18,616	8,966	8,375	5,245	2,048	80,407
1948	20,962	14,316	15,339	9,522	8,507	3,175	3,036	74,857
1947	13,511	8,016	16,693	3,883	3,577	1,743	1,764	49,187
INTERNATIONAL	1949	20,603	25,647	575	26,100	9,540	7,079	91,164
1948	25,000	29,306	30,749	13,078	13,474	10,207	3,389	125,203
1947	20,925	27,044	32,301	12,484	11,005	5,918	3,474	113,151
KENWORTH	1949	.....	.....	.....	.....	.....	392	392
1948	.....	.....	.....	.....	.....	.....	478	478
1947	.....	.....	.....	.....	.....	.....	487	487
MACK	1949	.....	.....	654	741	1,826	3,645	6,866
1948	.....	.....	.....	960	1,274	4,202	3,359	9,795
1947	.....	.....	1	1,373	1,671	2,257	2,657	10,917
OSHKOSH	1949	Included with "All Others"	.....	.....	.....	.....	.....	.....
1948	.....	.....	.....	.....	.....	.....	173	173
1947	.....	.....	.....	.....	.....	.....	228	228
REO	1949	.....	.....	2,281	1,304	327	91	4,003
1948	.....	.....	3,953	4,684	1,404	246	486	10,773
1947	.....	.....	7,017	1,777	2,280	1,065	772	12,911
STERLING	1949	.....	.....	.....	.....	16	213	229
1948	.....	.....	.....	.....	.....	14	397	411
1947	.....	.....	.....	.....	.....	46	530	576
STUDEBAKER	1949	25,159	14,788	9,279	5,873	.....	.....	55,099
1948	18,651	10,979	18,638	4,389	.....	.....	.....	50,657
1947	20,271	6,271	12,366	2,953	.....	.....	.....	41,861
WARD LA FRANCE	1949	Included with "All Others"	.....	.....	.....	.....	.....	.....
1948	.....	.....	.....	.....	.....	22	249	271
1947	.....	.....	.....	.....	.....	56	453	509
WHITE	1949	.....	.....	543	1,305	5,173	1,297	8,318
1948	.....	.....	.....	1,005	423	8,701	1,474	11,603
1947	.....	.....	899	399	1,828	8,534	1,426	13,086
WILLYS—JEEP	1949	14,472	.....	.....	.....	.....	.....	14,472
1948	48,644	.....	.....	.....	.....	.....	.....	48,644
1947	47,612	.....	.....	.....	.....	.....	.....	47,612
WILLYS—TRUCK	1949	9,284	9,009	.....	.....	.....	.....	18,293
1948	16,768	11,074	.....	.....	.....	.....	.....	27,840
1947	815	1,392	.....	.....	.....	.....	.....	2,207
ALL OTHERS	1949	2,097	111	259	24	222	239	3,601
1948	858	457	162	3	263	386	710	2,839
1947	4,385	416	204	13	210	273	757	6,258
TOTAL	1949	438,316	230,293	78,382	142,064	35,576	23,831	961,961
1948	379,674	223,065	156,954	173,102	49,264	35,107	18,008	1,035,174
1947	278,251	153,643	220,801	152,549	25,329	29,078	19,483	879,132
% OF TOTAL	1949	45.56%	23.94%	8.15%	14.77%	3.70%	2.48%	100.00%
1948	36.68%	21.55%	15.16%	16.72%	4.76%	3.39%	1.74%	100.00%
1947	31.65%	17.48%	25.12%	17.35%	2.88%	3.30%	2.22%	100.00%

*—Data from R. L. Polk & Co.

1949 NEW TRUCK REGISTRATIONS by Makes by States*

STATE	Auto-car	Brock-way	Chevrolet	Diamond T	Divco	Dodge	Federal	Ford	FWD	GMC	International	Ken-worth	Mack	Pontiac	Reo	Sterling	Studebaker	White	Willlys	All Others	Total
Alabama	1		8874	21	17	2571	11	4409		2092	1513		109	9	38		1202	113	657	37	21,674
Arizona	1		1902	14	19	666	4	1483	2	484	312		9	1	28	2	526	17	225	43	5,744
Arkansas	2		9002	47		2130		5226		1894	1376		22	2	90		1304	34	805	30	21,969
California	96	19	20333	254	421	6777	35	11140	48	5322	3809	126	204	24	203	69	3931	423	1428	374	55,036
Colorado	1		4823	89	13	1471	16	2262	2	1233	1086		8	1	31		857	50	610	14	12,569
Connecticut	57	31	2197	73	71	926	35	1420	5	514	860		161	7	35	2	407	46	341	24	7,212
Delaware	9	9	961	16	5	308	1	821		199	300		9	14	7		126	17	55	10	2,867
District of Columbia	28	6	974	32	59	460	22	601		217	285		42	12	23	5	69	37	71	12	2,954
Florida	4		7128	132	60	2580	15	4236		1393	1441		258	9	88		1205	136	1029	55	19,769
Georgia	3	6	10252	103	18	3045	19	6750		2004	2206		161	39	121		1573	172	843	22	27,354
Idaho	1		2423	91	2	884	7	1398	10	970	821	46	18		39		728	20	606	27	8,091
Illinois	73	11	19537	515	257	6301	45	9826	18	3264	6180		227	36	271	3	2817	587	1184	178	51,130
Indiana	12	13	8423	112	133	3144	25	5454	4	2097	3309	1	117	18	131		2013	324	660	72	26,062
Iowa	9		9699	166	44	3022	13	5387	13	1608	3245	1	84	9	83		1577	95	699	69	25,823
Kansas		1	8986	94	24	2294	25	4366	1	1820	2458	1	10	23	69		1348	78	582	54	22,234
Kentucky	5	1	7885	88	40	2159	17	4497	1	1928	1907		50	10	53		972	111	1351	41	21,116
Louisiana	3		6798	106	16	1914	6	4766	2	1680	1417		59	9	29		1187	84	574	54	18,684
Maine	9	15	2114	9	8	639	6	1144		724	646		75	13	49	1	311	46	209	14	6,032
Maryland	39	65	3445	43	54	1488	37	2083		710	1023		127	7	68	1	381	108	238	37	9,954
Massachusetts	127	106	3901	85	142	1890	14	2637	7	803	1333		239	9	115	40	697	239	286	28	12,698
Michigan	25	4	13790	102	273	3965	60	9398	2	2712	2275		174	10	112		1422	234	586	113	35,257
Minnesota	48		8475	88	58	2373	23	4631	6	1469	2769	6	136	9	51		1901	78	379	60	22,555
Mississippi	1		7515	44		2018	4	3971		2025	1304		36	7	30		1061	32	589	34	18,663
Missouri	8	1	13381	71	111	3826	1	6082	1	2827	2636	1	54	6	111		1663	211	877	47	31,915
Montana	5		3013	79	12	923	18	1901	8	987	1077	18	6	1	63		717	23	844	19	9,714
Nebraska		2	6088	247	3	1486	13	3267	9	1332	2182	9	20	9	30		1200	72	1012	49	17,030
Nevada	1		530	2	1	206	2	411		202	134		3	1	5	1	179		104	5	1,788
New Hampshire	9	7	989	15	18	413	2	753	1	256	309		63	4	17	1	127	13	145	5	3,147
New Jersey	123	219	7007	180	212	2937	88	5117	15	2149	2209	1	480	131	103	7	865	401	828	106	23,158
New Mexico	2		3197	33	3	892	2	1140	1	835	471		22		15		577	38	187	31	7,446
New York	401	665	13125	607	396	7586	164	8699	53	4024	5212		1346	56	456	32	2037	1030	1542	353	47,784
North Carolina	23	1	10850	48	43	3178	43	6541	3	1751	1876		377	17	111		1500	223	802	159	27,551
North Dakota	6		3512	69	4	763	24	2109		654	1542		3		10		651	9	324	10	9,690
Ohio	73	12	13964	220	344	5377	137	8391	9	2602	4112		285	103	195		2067	746	1131	118	39,886
Oklahoma			8930	30	41	2924	3	5073	6	1673	2281	1	28	19	75		1354	132	865	35	23,677
Oregon	16		4318	45	32	1667	18	2553	6	1297	1120	60	114	4	34	8	679	99	665	130	12,865
Pennsylvania	216	363	14246	333	74	7009	93	9627	8	3775	4706		820	31	308	25	2394	825	1241	222	46,306
Rhode Island	82	6	984	32	84	464		756		191	415		82	15	24	9	175	45	117	18	3,479
South Carolina	13	1	4723	30	15	1542	1	2837	3	1055	771		116	5	20		589	73	334	20	12,148
South Dakota	7		2777	84	4	799		1425	9	494	1367	9		2	17		531	8	493	31	8,074
Tennessee		4	10606	98	129	2882	43	5016	1	2690	2271		155	11	134	1	1376	253	947	68	26,682
Texas	70	2	24510	179	142	9180	18	15625		7486	6295	27	182	11	129		4222	457	2646	467	71,650
Utah			1899	53	8	650	14	1047	4	624	638	14	25	8	32	1	396	36	270	37	5,756
Vermont	1	12	957	14	7	407	10	631	1	333	485		12	4	26		292	10	241	15	3,458
Virginia	32	38	8419	70	47	2610	23	4686		1648	1706		147	10	70		1031	165	682	64	21,648
Washington	10		4489	72	54	1814	11	3029		1304	1492	60	57	14	55	13	812	102	581	73	14,048
West Virginia	2	6	3528	40	20	1398	20	2196	16	942	773		34	7	35		402	68	921	43	10,451
Wisconsin	13		8445	142	142	2432	24	4471	57	1540	2772		105	28	146	3	1361	189	581	145	22,586
Wyoming	1		1595	57		466	2	891	4	392	437		3	8	18		297	9	378	9	4,567
Total—1949	1655	1626	345519	5172	3577	116956	1225	202179	337	80407	91164	392	6866	775	4003	229	55099	8318	32765	3697	981,981
Total—1948	2770	2958	302219	10657	5618	114431	4026	225729	811	74857	125203	478	9795		10773	411	50657	11603	76484	5694	1,035,174

* Data from R. L. Polk & Co.

NEW TRUCK REGISTRATIONS by Makes, by Years*

	1949	1948	1947	1946	1941	1940
Autocar	1,655	2,770	4,334	4,755	2,510	1,955
Brockway	1,626	2,958	4,255	3,683	2,284	1,672
Chevrolet	345,519	302,219	235,803	171,618	212,797	194,038
Crosley	871	2,411				
Diamond T	5,172	10,657	10,475	5,093	6,077	6,358
Divco	3,577	5,618	4,893	3,734	2,306	1,662
Dodge	116,956	114,431	126,736	96,490	62,925	54,615
Federal	1,225	4,026	6,020	4,557	1,611	1,617
Ford	202,179	225,729	186,414	131,469	174,024	162,333
F. W. D.	337	811	1,195	585	280	252
G. M. C.	80,407	74,857	49,187	25,645	11,703	42,436
Hudson		117	2,534	2,543	736	781
International	91,164	125,203	113,151	78,392	92,482	77,891
Kenworth	392	478	487			
Mack	6,866	9,795	10,917	4,687	9,468	7,754
Nash		32				
Oshkosh	†	173	245			
Plymouth				28	7,732	9,573
Pontiac	775					
Reo	4,003	10,773	12,911	10,489	1,543	625
Sterling	229	411	576	510	400	441
Studebaker	55,099	50,657	41,861	25,380	5,078	1,207
Ward La France	†	271	509			
White	8,318	11,603	13,086	10,117	9,271	7,344
Willys-Jeep	14,472	48,644	47,612	42,135	2,031	2,341
Willys-Truck	18,293	27,840	2,207			
All Others	2,826	2,690	3,724	3,358	1,429	1,552
Total	961,961	1,035,174	879,132	625,249	840,697	576,327

†—Included with "All Others."

*—Data from R. L. Polk & Co. No data were collected for the last 9 months of 1942 and the war years of 1943, 1944 and 1945.

WHOLESALE VALUE of Repair Parts and Accessories Production*

Year	Wholesale Value	Year	Wholesale Value
1934	\$304,642,000	1942	\$471,957,000
1935	378,323,000	1943	527,710,000
1936	448,527,000	1944	816,724,000
1937	484,619,000	1945	1,284,926,000
1938	348,068,000	1946	1,752,918,000
1939	454,673,000	1947	2,353,523,000
1940	553,004,000	1948	2,552,872,000
1941	718,212,000	1949	1,912,000,000

*—Estimated on basis of excise tax receipts.

NEW TRUCK REGISTRATIONS by Years*

Year	Units
1927	327,965
1928	341,123
1929	527,057
1930	410,699
1931	313,884
1932	180,413
1933	245,869
1934	403,686
1935	510,683
1936	611,644
1937	618,249
1938	365,349
1939	486,748
1940	559,150
1941	640,687
1942	77,422
1943	62,469
1944	121,269
1945	350,932
1946	625,249
1947	879,132
1948	1,035,174
1949	961,961

Source: 1926 through March, 1942, and 1946 and later years compiled by R. L. Polk & Co. April,

NEW TRUCK REGISTRATIONS by Makes by States* **For January, 1950**

STATE	Auto-car	Brock-way	Chevrolet	Diamond T	Divco	Dodge	Federal	Ford	FWD	GMC	International	Ken-worth	Mack	Pontiac	Reo	Sterling	Stude-baker	White	Willys	All Others	Total
Alabama			591	1	3	184	1	449		106	104		5	3	3		86	12	45	1	1,594
Arizona			109			50		126		37							25	2	16	2	387
Arkansas																					
California	8		1412	18	23	379	1	935		287	229	11	14	4	2	10	200	9	47	28	3,625
Colorado			471	5	2	108	2	244		70	74		5		1		70	3	42	2	1,099
Connecticut	5	4	169	4	8	64	5	105		39	44		18	2	1		16	8	10	2	504
Delaware	1	2	78	3	22			84		14	24			1	2	1	13	2	3	2	252
District of Columbia	7		48	1	10	24		30		9	15				3		5	3	1		156
Florida			301	10	4	142		321		61	72		31		3		90	13	39	4	1,091
Georgia			827	3	1	306	1	719		198	163		23	2	7		159	23	61	4	2,487
Idaho			86			22		63	1	16	30	2	1		1		21	2	16	11	272
Illinois	5		952	30	15	329	2	692		146	310		28	5	12		124	47	13	8	2,718
Indiana		2	445	3	7	176		440		93	189		6	5	1		82	15	26	5	1,475
Iowa			624	9	3	212		452		103	213		11	1	5		87	9	6	2	1,737
Kansas			281	1	4	86		276		61	101			1	8		24	2	11		856
Kentucky			556	2	2	127	3	401		98	106				4		50	1	49		1,399
Louisiana			477	3		138		460		122	69				2		99	2	30	3	1,407
Maine	3	4	198	2	1	74		143		67	72		11	5	1		31	2	27	3	644
Maryland	1	5	259	4	5	100	6	199		45	50		12	3	4		26	3	15	2	739
Massachusetts	11	9	258	17	9	259	3	259		100	87		26	6	12	2	45	10	22	2	1,167
Michigan	1		922	5	15	294	7	722	1	137	147		10	1	8		93	9	16	2	2,390
Minnesota			468	10	4	173	5	389	8	76	172	1	6	2	1		105	14	15	22	1,471
Mississippi			553	3		167	2	296		138	76		5		5		80	1	18		1,344
Missouri			576	7	11	173	1	417		130	135	1	9		6		86	26	19	10	1,607
Montana			164	4		44	2	99	1	28	58	1	1		1	2	24	2	43		474
Nebraska			387	15	1	112		305	6	63	136				1	2	62	3	40		1,133
Nevada			29			12		22		18	6				1		8		8		104
New Hampshire			37			20		24		13	13		2				3	3	2		117
New Jersey	2	12	377	18	15	204	3	336	3	137	114		50	19	3	1	41	25	25	5	1,390
New Mexico			253			67		112		67	37	2	4		1		58	2	18	4	625
New York	40	79	1536	159	56	914	32	968	9	493	792		283	23	64	5	260	138	152	40	6,043
North Carolina	3		572			210	1	632		105	80		26	2	3	2	108	13	16	6	1,781
North Dakota			93	1		29	1	68		19	64						19		23	2	319
Ohio	9		958	14	18	390	9	864		212	357		49	20	16		112	76	33	2	3,139
Oklahoma			457	2	2	132		342	1	91	85				14		61	10	30	1	1,226
Oregon			142	2	4	58		140		44	46	1			2		25	1	26	3	494
Pennsylvania	8	36	796	14	12	446	5	773		172	275		82	12	30	2	102	47	41	6	2,859
Rhode Island	4		66	1	2	38	1	58		16	31		6	3	3	1	11	5	6		252
South Carolina	1		324	1		93		261		68	63		8				59	7	8		893
South Dakota			140	13		49	1	95	3	24	75	2					27		18	1	448
Tennessee		1	695	2	1	260		456		158	87		6	4			119	4	28	3	1,824
Texas	2		2346	11	9	834	2	1973		604	480	4	15	4	11		348	31	171	10	6,855
Utah			111	5	3	25		63	1	27	28	1	4		1		7		14	5	295
Vermont			45			23		22		20	28						10	1	6	2	157
Virginia	2		514		3	139		372		114	88		16	3	2		75	24	39	3	1,384
Washington			192	1	7	75		151		44	70	1	12	2	1		23	6	18		603
West Virginia			251		1	80	3	240		61	54		8	1	2		22	7	49		779
Wisconsin			335	5	1	134	1	258	6	65	130		19	4	2		63	10	13	10	1,056
Wyoming			69	2		12		24		32	22						14		14		189
Total—January, 1950	113	154	21580	408	269	8009	100	18880	40	4858	5693	32	815	142	251	23	3278	633	1378	216	64,782
Total—January, 1949	226	164	21066	517	280	8402	119	11585	33	4681	7468	34	508	142	347	23	4272	708	3456	438	64,308

* Data from R. L. Polk & Co.

CENSUS OF TRUCKS, TRACTORS AND TRAILERS **Owned by Manufacturing Industries** *(Based on Reports from 1947 Census of Manufacturers.)*

INDUSTRY GROUPS	MANUFACTURERS RATED CAPACITY							Total-Trucks and Tractor-trailers	Trailers and Semi-trailers
	Total Vehicles †	Under 1½	1½	Over 1½- Less Than 3½	3½ and Less Than 5	5 and Over	Truck Tractors		
Food and kindred products	234,675	91,762	87,424	27,802	3,572	3,942	9,026	223,528	11,147
Tobacco manufacturers	745	140	256	141	19	30	77	683	82
Textile mill products and other fiber manufacturers	5,855	1,412	2,159	1,073	176	299	308	5,428	427
Apparel and other finished fabric products	2,896	1,487	818	288	57	46	94	2,790	106
Lumber and timber basic products	45,181	6,749	13,226	6,624	941	1,232	7,871	36,643	8,538
Furniture and finished lumber products	5,810	1,598	2,008	808	122	90	565	5,191	619
Paper and allied products	6,869	846	2,184	1,380	325	365	754	5,854	1,015
Printing publishing and allied industries	7,232	4,408	1,547	660	205	305	52	7,177	55
Chemicals and allied products	18,580	3,556	6,224	2,749	674	1,095	1,567	15,865	2,715
Petroleum and coal products	6,862	1,593	1,691	1,035	258	559	754	5,890	972
Rubber products	1,375	317	384	166	32	47	106	1,052	323
Leather and leather products	1,149	425	401	141	37	41	42	1,087	62
Stone clay and glass products	18,843	3,165	7,120	3,497	709	1,245	1,429	17,165	1,678
Primary metal products	6,846	1,537	1,982	1,232	351	666	475	6,243	603
Fabricated metal products (exc. ordnance machinery transp. equip.)	13,778	4,382	4,201	1,602	346	544	1,116	12,191	1,587
Machinery (except electrical)	12,366	5,127	3,433	1,588	363	466	620	11,597	769
Electrical machinery appliances equipment	3,339	1,285	906	422	102	179	181	3,075	264
Transportation equipment	8,543	2,167	1,854	1,194	185	291	1,116	6,807	1,736
Instruments and related products	849	371	221	107	20	67	11	797	52
Miscellaneous manufacturing industries	5,230	2,710	1,584	511	84	89	113	5,091	139
Motion picture production	705	216	170	74	60	89	10	619	86
Total—Manufacturing Industries	407,728	135,253	139,793	53,094	8,638	11,687	26,288	374,753	32,975
Per Cent of Total by Tonnage Classifications		36.09%	37.30%	14.17%	2.30%	3.12%	7.02%	100.00%	

†—Includes trucks, truck-tractors, trailers and semi-trailers.

TOTAL TRUCK REGISTRATIONS by States

	1949	1948	1947	1946	1945	1944
Alabama	137,405	127,065	108,251	86,441	72,141	67,723
Arizona	52,919	48,647	42,295	35,044	29,462	27,211
Arkansas	121,413	125,161	112,157	94,450	78,902	74,459
California	559,369	529,492	487,929†	406,729†	355,282†	327,735†
Colorado	124,709	115,006	101,953	90,543	76,837	70,524
Connecticut	77,716	75,691	76,432	75,266	58,861	60,696
Delaware	17,682	17,557	15,913	14,266	13,162	14,371*
District of Columbia	18,389	18,389	15,888	14,495	13,879	13,563
Florida	168,307	156,639	138,373	120,525	96,384	88,053
Georgia	178,479	167,525	150,108	126,403	104,650	97,553
Idaho	64,137	59,644	50,877	40,000	38,352	35,533
Illinois	336,174	315,888	282,125	253,365	224,929	216,930
Indiana	206,154	227,480	197,416	163,859	137,809	137,252
Iowa	168,303	150,973	133,868	115,984	102,176	98,373
Kansas	195,449	183,733	167,386	147,296	129,353	121,819
Kentucky	154,941	137,711	118,461	101,541	82,017	76,603
Louisiana	140,001	122,935	105,958	98,117	78,256	72,015
Maine	59,894	62,210	61,001	56,769	49,891	44,527
Maryland	92,200	90,935	82,611	81,649	65,090	63,319
Massachusetts	153,208	151,609	144,113	131,071	111,417	103,606
Michigan	270,309	258,689	222,560	194,546	167,677	156,174
Minnesota	182,532	163,756	148,644	130,948	115,906	113,666
Mississippi	123,954	117,537	99,390	95,536	68,988	65,760
Missouri	245,000	227,205	209,997	188,394	157,084	143,867
Montana	76,478	70,391	63,871	54,947	48,260	46,730
Nebraska	122,100	105,750	98,296	87,121	75,554	72,544
Nevada	14,551	13,417	12,595	10,776	9,193	9,520
New Hampshire	36,214	31,623	35,663	28,872	23,483	27,240
New Jersey	207,326	199,260	186,794	167,506	149,000	138,937
New Mexico	52,564	45,696	41,062	35,179	29,640	27,826
New York	493,868	498,125	425,323	370,709	354,052	282,091
North Carolina	177,742	167,824	147,703	123,748	97,500	93,063
North Dakota	77,347	68,919	60,777	53,868	49,262	46,946
Ohio	304,801	296,296	270,284	242,603	196,810	144,484
Oklahoma	183,435	162,941	143,078	128,124	109,896	102,383
Oregon	123,897	115,648	115,845*	99,025	82,408	77,773
Pennsylvania	428,853	416,551	407,591	342,172	304,972	276,072
Rhode Island	30,181	29,662	28,413	26,959	22,607	20,985
South Carolina	100,633	91,849	85,376	64,158	48,047	45,701
South Dakota	66,656	60,163	50,545	42,163	37,149	35,590
Tennessee	144,000	139,020	124,826	99,517	77,134	73,650
Texas	531,000	526,000	437,706	379,158	307,655	286,669
Utah	42,308	39,637	37,148	31,267	28,748	25,836
Vermont	15,023	15,355	14,818	13,570	11,667	10,806
Virginia	152,592	150,633	132,996	116,084	94,286	82,912
Washington	152,980	145,787	133,102	117,173	103,762	96,168
West Virginia	89,546	86,217	76,940	66,612	55,512	51,381
Wisconsin	210,736	196,503	181,443	160,940	142,240	139,186
Wyoming	35,358	31,709	27,341	24,105	21,436	20,472
Total	7,715,831	7,356,553	6,612,922	5,749,643	4,908,778	4,516,157

†—Includes light commercial vehicles registered as passenger cars.

*—Includes trailers for 1947 and all previous years.

†—Large increase due to change in classification, of trucks previously registered as passenger cars.

1950 Domestic Truck Factory Sales by Gross Vehicle Weights*

	5,000 lb. and less	5,001-10,000	10,001-14,000	14,001-16,000	16,001-19,500	19,501-26,000	26,000 and Over	Total
December, 1949	30,427	12,782	4,512	7,217	2,709	1,593	1,544	60,784
January, 1950	39,252	19,251	6,604	13,093	2,774	1,721	1,459	84,354

*—Automobile Manufacturers Association.

TOTAL U. S. TRUCK REGISTRATIONS

Year	Units	% Gain
1910	10,000	65
1911	20,000	100
1912	41,400	107
1913	63,800	54
1914	85,600	34
1915	136,000	59
1916	215,000	58
1917	326,000	52
1918	525,000	61
1919	794,372	51
1920	1,006,082	27
1921	1,117,100	11
1922	1,375,725	23
1923	1,612,569	17
1924	2,134,724	32
1925	2,440,854	14
1926	2,764,222	13
1927	2,914,019	5
1928	3,113,999	7
1929	3,379,854	8
1930	3,486,019	3
1931	3,486,571	- 0.6
1932	3,229,315	- 0.7
1933	3,227,357	- 0.6
1934	3,409,335	5.5
1935	3,655,705	7.1
1936	3,981,755	9.1
1937	4,107,244	3.1
1938	4,210,022	2.5
1939	4,419,893	5.0
1940	4,604,722	4.2
1941	4,859,682	5.5
1942	4,644,209	- 4.4
1943	4,549,882	- 2.0
1944	4,516,157	- 0.7
1945	4,908,778	8.8
1946	5,749,643	17.1
1947	6,612,922	15.0
1948	7,356,553	11.1
1949	7,715,831	4.9

Truck Dealers, Wholesalers, Independent Repair Shops *

(As of January of Each Year.)

	Whole-salers	Total Truck Dealers	Independent Repair Shops
1936	5,905	23,045	60,574
1937	5,874	24,853	56,423
1938	5,934	27,248	51,709
1939	6,019	26,909	50,406
1940	6,176	24,575	49,081
1941	6,575	24,992	49,208
1942	6,631	32,291	47,552
1943	6,130	27,620	43,540
1944	6,101	26,370	41,183
1945	6,217	27,159	42,702
1946	6,612	29,387	49,485
1947	7,328	25,998†	55,694
1948	7,982	27,574	59,908
1949	8,338	28,307	63,714
1950	8,567	28,307	63,714

†—Reduction in truck dealers due to discontinuance of Plymouth truck production.

*—Trade List Department, Chilton Company.

TRUCKS IN USE by Makes and by Year of Manufacture

Year of Manufacture	Auto-car	Brock-way	Chevrolet	Cros-ley	Diamond T	Divco	Dodge	Federal	Ford	FWD	GMC	Hudson	Inter-national	Ken-worth	Mack	Reo	Ster-ling	Stude-baker	White	Willys	All Others	Total July 1, 1949
1940	691	614	161,421	413	2,485	1,798	53,203	528	84,920	313	39,132	.....	42,621	129	2,596	1,846	86	49,508	3,651	16,554	5,962	468,471
1941	2,459	2,647	290,548	3,344	10,065	5,622	113,032	3,417	226,651	457	74,824	.....	119,038	393	8,963	11,368	349	28,524	10,855	55,526	15,570	983,653
1942	4,072	3,939	206,193	2,002	10,447	8,836	121,034	5,518	174,674	928	48,660	.....	115,416	471	12,233	10,462	513	40,109	13,213	31,589	14,856	624,162
1943	4,562	3,704	262,474	46	5,237	4,278	114,234	4,153	166,458	712	26,036	.....	85,944	431	4,287	9,851	555	26,585	9,968	26,412	11,364	757,071
1944	2,243	1,995	34,230	10	3,141	1,851	18,655	1,880	43,145	322	12,607	.....	26,304	373	4,692	2,667	410	3,152	6,521	2,504	3,714	173,416
1945	1,115	1,026	16,339	1	1,568	239	7,308	751	17,812	131	6,374	.....	14,734	128	2,818	458	277	1,688	3,111	911	1,969	78,438
1946	188	69	2,741	6	208	75	1,952	305	7,432	32	2,716	.....	3,576	29	376	136	32	661	1,238	1,784	1,097	24,853
1947	728	236	91,768	72	1,445	561	40,710	820	72,990	156	24,520	.....	27,139	76	2,639	1,143	199	2,301	3,649	4,006	4,632	279,870
1948	2,394	2,049	196,611	85	5,303	2,659	80,936	1,116	168,667	264	43,076	780	82,343	228	8,360	1,482	369	5,482	8,123	2,779	16,162	623,246
1949	1,331	1,210	154,853	25	4,516	1,613	49,611	1,001	122,357	188	30,565	538	63,024	195	5,898	342	268	1,326	4,073	2,461	14,139	455,529
1939	1,294	1,289	121,139	7	3,558	1,299	41,016	853	90,599	172	21,832	399	51,923	108	4,815	695	229	1,813	2,833	1,147	11,665	358,675
1938	842	885	83,946	6	2,864	1,163	26,829	622	69,378	181	12,868	444	41,924	81	2,939	1,926	169	1,507	2,252	1,596	8,970	261,282
1937	1,115	1,011	135,479	9	4,655	717	44,081	916	126,624	279	27,452	1,611	44,258	100	3,282	2,155	201	3,552	3,405	1,123	17,250	419,275
1936	737	890	116,641	3	4,023	651	54,194	976	119,082	266	13,488	946	41,675	111	2,122	1,471	166	1,331	2,838	1,208	9,921	372,740
1935	407	381	67,207	3	2,378	212	26,832	560	88,126	137	3,066	345	24,216	50	863	1,436	83	760	1,212	737	5,832	224,843
1934	471	311	53,401	3	1,634	120	16,159	461	60,302	82	2,130	213	9,981	47	880	1,008	45	442	1,240	117	4,288	153,335
1933	298	134	28,860	1	1,014	86	6,960	207	21,120	49	974	73	5,875	43	598	441	25	367	290	100	3,509	71,024
Before '33	944	661	95,715	13	1,576	174	12,559	837	273,511	310	3,689	763	14,694	205	7,645	4,045	575	2,989	3,289	1,337	31,180	456,641
Unknown	614	731	20,505	46	1,032	375	7,188	500	19,993	53	5,196	3,717	9,644	30	1,538	926	100	1,719	1,856	1,368	13,677	90,808
Total	26,505	23,842	2,131,971	6,095	67,149	29,329	637,493	25,421	1,953,541	5,032	399,205	9,819	826,329	3,224	77,534	53,638	4,651	173,676	83,623	153,274	195,777	7,087,128

*—Data from Reuben H. Donnelley Corp. As of July 1, 1949.

AASHO Standards

Recommended uniform standards submitted by American Association of State Highway Officials for width, height, length, speed and permissible vehicle loads

Uniform standards governing the maximum dimensions, weights and speeds of motor vehicles proposed by the Highway Transport Committee of the American Association of State Highway Officials, have been adopted by a letter ballot of the member State highway departments, with a recommendation that they be incorporated in the motor vehicle laws of all States.

The Association recommends that the standards be considered for adoption by all States in order to promote efficiency in the interstate operation of motor vehicles, increase the safety of highway transportation and establish a basis for regulation of the many relationships between the dimensions and weights of motor vehicles and the strengths and capacities of existing highways.

The standards, based upon years of research by State highway departments, and the Public Roads Administration, are advocated in lieu of recommendations previously made by the American Association of State Highway Officials on November 17, 1932, and of modified recommendations applicable during the war emergency period, which were adopted May 27, 1942.

The recommendations, as finally adopted, are as follows:

1. Width: No vehicle unladen or with load, shall have a total outside width in excess of 96 in. (Note: It is recognized that certain conditions inherent in the design of vehicles suggest the desirability of 102 in. as a standard of maximum width, but the existence of numerous bridges and a large mileage of highway too narrow for the safe accommodation of vehicles of such width precludes the present adoption of the higher standard of width. The State highway departments and Public Roads Administration are urged to give serious consideration to the desirability of eventual provision for the accommodation of vehicles 102 in. in width in planning the reconstruction of Federal-aid and State highways.)

2. Height: No vehicle, unladen or with load, shall exceed a height of 12 ft., 6 in.

3. Length: (a) No single truck, unladen or with load, shall have an overall length, inclusive of front and rear bumpers, in excess of 35 ft.

(b) No single bus, unladen or with load, shall have an overall length, inclusive of front and rear bumpers, in excess of 40 ft., provided that a bus in excess of 35 ft. in overall length shall have not less than 3 axles.

(c) No combination truck-tractor and semi-trailer, unladen or with load, shall have an overall length inclusive of front and rear bumpers, in excess of 50 ft.

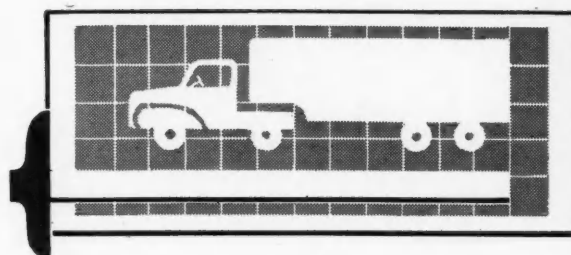
(d) No other combination of vehicles shall consist of more than two units, and no such combination of vehicles, unladen or with load, shall have an overall length, inclusive of front and rear bumpers, in excess of 60 ft.

(TURN TO PAGE 220 PLEASE)

SECTION

3

NINETEEN - FIFTY
FLEET OPERATORS
REFERENCE ANNUAL



SELECTION and OPERATION

SPECIFICATIONS

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TRUCK TIRE DATA

Showing ply ratings, dual spacing, max. pressures, max. load,
rev. per mile, advanced and interim rim recommendations

Tire Size	Ply Rating	Advanced Rim Recommended Permissible	Interim Rim Recommended Permissible	Maximum Pressure (lb)	Maximum Load (lb)	Minimum Dual Spacing		Tube Size	Flap	Approximate* Revolutions Per Mile
						With Chain	Without Chain			
6.50-17	6	5.0	.....	50	1500	9.0	8.4	6.50-17W	17-K	675
6.50-18	6	5.0	.....	50	1575	9.0	8.4	6.50-18W	18-K	.....
6.50-20	6	5.0	5.00R	50	1700	9.0	8.4	6.50-20W	20-K	610
7.00-17	8	5.5 5.0	5.50S 5.00R	55	1775	9.7 9.5	9.0 8.8	7.00-17W	17-M	651
7.00-18	8	5.5 5.0	5.50S 5.00R	55	1800	9.7 9.5	9.0 8.8	7.00-18W	18-M	630
7.00-20	8	5.5 5.0	5.50S 5.00R	55	2000	9.7 9.5	9.0 8.8	7.00-20W	20-M	596
7.50-17	8	6.0 5.5	6.00S 5.50S	60	2100	10.3 10.1	9.6 9.4	7.50-17W	17-M	637
7.50-18	8	6.0 5.5	6.00S 5.50S	60	2200	10.3 10.1	9.6 9.4	7.50-18W	18-M	617
7.50-20	8	6.0 5.5	6.00S 5.50S	60	2375	10.3 10.1	9.6 9.4	7.50-20W	20-M	580
8.25-17	10	6.5 6.0	6.50T 6.00S	65	2600	11.2 11.0	10.4 10.2	8.25-17W	17-M	.....
8.25-18	10	6.5 6.0	6.50T 6.00S	65	2675	11.2 11.0	10.4 10.2	8.25-18W	18-M	570
8.25-20	10	6.5 6.0	6.50T 6.00S	65	2900	11.2 11.0	10.4 10.2	8.25-20W	20-M	553
9.00-18	10	7.0 6.5	7.00T 6.50T	65	3225	12.2 12.0	11.4 11.2	9.00-18W	18-N	559
9.00-20	10	7.0 6.5	7.00T 6.50T	65	3450	12.2 12.0	11.4 11.2	9.00-20W	20-N	530
10.00-18	12	7.5 7.0	7.50V 7.00T	70	3775	13.1 12.9	12.2 12.0	10.00-18W	18-R	544
10.00-20	12	7.5 7.0	7.50V 7.00T	70	4000	13.1 12.9	12.2 12.0	10.00-20W	20-R	515
10.00-22	12	7.5 7.0	7.50V 7.00T	70	4275	13.1 12.9	12.2 12.0	10.00-22W	22-R	489
10.00-24	12	7.5 7.0	7.50V 7.00T	70	4550	13.1 12.9	12.2 12.0	10.00-24W	24-R	466
11.00-20	12	8.0 7.5	8.00V 7.50V	70	4500	13.8 13.6	12.8 12.6	11.00-20W	20-R	494
11.00-22	12	8.0 7.5	8.00V 7.50V	70	4750	13.8 13.6	12.8 12.6	11.00-22W	22-R	460
11.00-24	12	8.0 7.5	8.00V 7.50V	70	5000	13.8 13.6	12.8 12.6	11.00-24W	24-R	450
12.00-20	14	8.5 8.0	8.50V 8.00V	75	5275	14.6 14.4	13.6 13.4	12.00-20W	20-R	482
12.00-22	14	8.5 8.0	8.50V 8.00V	75	5600	14.6 14.4	13.6 13.4	12.00-22W	22-R	460
12.00-24	14	8.5 8.0	8.50V 8.00V	75	5925	14.6 14.4	13.6 13.4	12.00-24W	24-R	441
13.00-20	16	9.0 8.5	9.00V 8.50V	75	6275	15.9 15.6	14.9 14.6	13.00-20W	20-V	473
13.00-24	16	9.0 8.5	9.00V 8.50V	75	7025	15.9 15.6	14.9 14.6	13.00-24W	24-V	422
14.00-20	18	10.0 9.0	9.00V (a)	80	7650	17.3 16.9	16.2 15.8	14.00-20W	20-V	437
14.00-24	18	10.0 9.0	9.00V (a)	80	8525	17.3 16.9	16.2 15.8	14.00-24W	24-V	403

*—For an accurate formula used in figuring revolutions per mile, see p. 135.

(a)—Dual spacing with chain—16.9; without chain—15.8. Disregard columns 7 and 8.

Data excerpted from Tire & Rim Association, Inc. 1949 Yearbook.

Safety Equipment

Required & Permitted on Trucks, Truck-Tractors, Trailers & Buses

**As Specified in I.C.C. Safety Rules & Regulations, State Motor Vehicle Laws
& Official Rulings . . . and Compiled by National Highway Users Conference**

TABULATION OF SAFETY REQUIREMENTS ON PAGES 124 & 125

EXPLANATION OF I.C.C. REFERENCES

†—The I.C.C. Motor Carrier Safety Regulations apply to "Automotive Safety Equipment" on vehicles operated by common and contract carriers ("for hire" carriers) of persons or property and by private carriers of property, when operated regularly in interstate or foreign commerce, except when operated wholly within a municipality, between contiguous municipalities, or within a zone adjacent to and commercially a part of any such municipality or municipalities. When vehicles of common, contract or private carriers are transporting explosives or other dangerous articles the last-mentioned excep-

tion does not apply.

‡—Requires "a device or other means of preventing or removing ice or frost" from windshield.

*—I.C.C. neither approves nor disapproves any individual required item. Its Motor Carrier Safety Regulations, however, set forth certain constructional details or performance standards to which certain items must conform. Reference should be made to the Motor Carrier Safety Rules for complete details.

COLOR AND REQUIREMENT SYMBOLS

A—Amber
G—Green
R—Red
N—No
NP—Not Permitted
NR—Not Required
NS—Not Specified

NSM—Not Specifically Mentioned
Y—Yes
Ye—Yellow
W—White
/—When used between two letters or numbers means "or."
Example—2/4 means "2 or 4."

GENERAL FOOTNOTES

- a—Prohibits red light visible from in front of vehicle.
- b—Prohibits red or green light visible from in front of vehicle.
- c—Tail lamp or separate lamp shall illuminate rear license plate with white light.
- d—Must be located and constructed so as to illuminate rear license plate with white light.
- e—May be incorporated in tail lamp.
- f—Semaphores required on school buses.
- g—One or both may be incorporated in tail lamp or lamps.
- h—Number plate must be illuminated with white light.
- i—Also two yellow reflectors on front of truck 70 in. or more in width and bus over 7 passengers.
- j—Also one amber reflector on front of vehicle.
- k—One may be part of tail lamp.
- m—Reflectors may be substituted.
- n—Reflectors may be used when vehicle has acetylene lamps.
- p—White, green or amber. Where green originally used, may be continued till replacements are necessary.
- r—Yellow or orange flags required.
- s—On vehicles over 45 feet long, rear clearance and marker lamps shall be in combination.
- t—One green marker lamp every 10 feet on combinations over 33 feet long.

- u—Vehicles manufactured after December 31, 1949, shall have double wipers.
- v—Rear clearance lamps may be red. May also be green on vehicles used prior to January 1, 1940.
- y—Trailer and semi-trailers shall have one lamp on front visible from both sides.
- z—Clearance and marker lamps may be in combination.
- aa—Every vehicle 72 in. or more wide must have 2 amber or clear front, and 2 amber, clear or red rear reflectors. Clearance lamps may be substituted. Reflectors must be approved. Clearance lamps need not be approved.
- cc—Vehicles manufactured after January 1, 1943, shall have double wipers.
- dd—On *interstate* buses—green lights adjacent to destination sign or near upper corners;
On *intrastate* buses—purple lights in same locations.
- ee—Double wipers required on all school buses.
- ff—Two yellow stop lamps required on all buses.
- ii—Clearance and marker lamps may be in combination. When in combination there must be one such lamp on each side, midway of vehicle.
- kk—Permits tinted other than red.
- xx—Fog lamps are included within the term "Auxiliary Driving Lamps" and are treated accordingly.

Data Revised to March 10, 1950

REFERENCES AND SYMBOLS EXPLAINED ON PAGE 123

COMMERCIAL CAR JOURNAL, April, 1950

SELECTION & OPERATION

REQUIRED

PERMITTED

TO BE CARRIED IN VEHICLES

TO BE MOUNTED

REAR VIEW MIRROR		WINDSHIELD WIPERS		DE-FROSTERS		FIRE EXTINGUISHERS		LIQUID BURNING FLARES		ELECTRIC FLARES		RE-REFLECTOR FLARES		FUSES		RED CLOTH FLAGS		LIGHT OR FLAG ON PROJECTING LOAD		AUXILIARY DRIVING LAMPS			FOG LAMPS			SPOT LAMPS			Driving Lights Permitted Lit At One Time	Jurisdictional Control Over Equipment			
Number	Must Be Approved	Number	Must Be Approved	Number	Must Be Approved	Number	Must Be Approved	Number	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Burning Time (Min.)	Number	Size (Square)	Light or Lantern	Flag Size (Sq.)	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Number	Color	Must Be Approved	Driving Lights Permitted Lit At One Time	Jurisdictional Control Over Equipment			
1	*	1	*	†	*	1	*	3	*	3	R	*	3	R	*	3	NS	15	2	12	1	12	NSM		NSM		NSM		4	I.C.C.			
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	3	R	Y	3	R	NS	2	12	1	12	2	NS	Y	2	NS	Y	NS	Ala.			
1	N	1	N	1†	N	1	Y	3	N	3	R	N	NR		3	R	15	3	12	1	12	2	NSa	Y	XX		2	NSa	Y	NS	Ariz.		
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	3	R	Y	NR		NR		1	16	3	NSa	Y	XX		1	NSa	Y	4	Ark.		
1	N	1u	N	NR	NR	1	Y	2	N	2	R	N	2	R	Y	NR		NR		2	16	2	A/W	Y	2	A/W	Y	2	NS	Y	4	Calif.	
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	3	R	Y	3	R	Y	3	NS	1	16	3	NS	Y	XX		1	NS	Y	4	Colo.	
1	N	1	N	1†	N	1	N	3n	Y	3n	R	Y	3n	R	Y	3n	R	NS	NR		1	NS	2	A/W	N	XX		1	A/W	N	4	Conn.	
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	3	R	Y	NR		NR		1	12	2	W	Y	2	A	Y	2	W	Y	4	Del.	
1/2	N	2	N	NR	NR	1	N	NR	NR		NR		NR		NR		NR		1	12	2	A/W	Y	2	A/W	Y	1	A/W	N	2	D. of C.		
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	NR		3	R	15	2	12	1	16	3	NSa	N	NSM		1	NSa	N	NS	Fla.		
1	N	1	N	1†	N	1	Y	3	N	3	R	N	3	R	N	3	R	15	2	12	1	12	2	NSa	N	NSM		1	NSa	N	NS	Ga.	
1	N	2	N	NR	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	NS	NR		1	16	2	NSa	Y	NSM		1	NSa	Y	2	Idaho	
1	N	1	N	NR	NR	2	N	3	Y	3	R	Y	3	R	Y	NR		3	NS	1	16	3	NS	Y	XX		1	NS	N	4	Ill.		
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	NR		3	R	15	2	12	1	16	3	NS	N	XX		1	W	N	4	Ind.		
1	N	1	N	NR	NR	2	Y	3	Y	3	R	Y	3	R	Y	1	NS	NS	3	NS	1	16	3	NSa	N	XX		1	NSa	N	4	Iowa	
1	Y	1	N	NR	NR	2	N	3	Y	3	R	Y	3	R	Y	3	R	15	3	15	1	16	3	A/W	Y	XX		1	W	N	4	Kan.	
1	N	NR	N	NR	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	NR		1	NS	NSM		NSM		NSM		NS		NS	Ky.	
1	N	1		NR	NR	1	N	3	Y	3	R	Y	3	R	Y	NR		2	12	1	12	2	NSa	Y	XX			Prohibited	NS		La.		
1	N	1	N	1†	N	1	Y	3	N	3	R	N	3	R	N	NR		2	12	1	NS	2	A/W	Y	XX		1	NS	N	NS	Me.		
1	N	1	N	NR	NR	2	Y	3	Y	3	R	Y	3	R	Y	NR		NR		1	16	3	NSa	Y	XX		1	NSa	N	4	Md.		
1	N	1	N	NR	NR	1	Y	3	Y	3	R	Y	NP		NR		NR		NR		NSM		NSM		NSM		1	NSa	Y	NS	Mass.		
1	N	1	N	NR	NR	1	N	3	Y	3	R	Y	3	R	Y	3	R	15	2	12	1	12	2	A/W	N	XX		2	A/W	N	NS	Mich.	
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	3	R	Y	NR		3r	24	1	16	4	A/W	Y	XX		2	W	Y	4	Minn.		
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	NSM		3	R	15	NR		1	16	2	NS	Y	XX		1	NS	N	4	Miss.		
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	3	R	Y	3	R	15	2	NS	1	16	3	Ye/AW	N	XX		1	Ye/AW	N	4	Mo.	
1	N	1	N	NR	NR	1	Y	3	Y	3	R	Y	3	R	Y	NR		2	14	1	16	3	NSb	Y	XX		1	NS	Y	NS	Mont.		
1	N	1	N	NR	NR	1	Y	3	Y	NR		3	R	Y	NR		2	NS	1	12	2	NSb	Y	NSM		1	NSb	Y	NS	Nebr.			
1	N	1	N	1†	N	1	Y	3	Y	3	R	Y	NSM		3	R	15	2	NS	1	NS	3	NS	N	XX		1	NS	N	4	Nev.		
1	N	1	N	1	N	1	Y	2	Y	2	R	Y	2	R	Y	2	R	20	NR		1	12	3	NS	Y	2	A	Y	2	NS	Y	4	N. H.
1	N	1	N	NR	NR	1	Y	3	Y	3	R	Y	3	R	Y	NR		NR		1	18	2	A/W	Y	XX		1	NSa	Y	4	N. J.		
1	N	1	N	1	N	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	3	12	1	12	2	NS	Y	XX		2	NS	Y	4	N. M.	
1	N	1	N	NR	NR	1	Y	2	Y	2	R	Y	2	R	Y	NR		NR		1	NS	NSM		NSM		NSM		NS		NS	N. Y.		
1	N	1	N	NR	NR	2	Y	2	N	2	R	N	NP		2	R	NS	2	12	1	12	2	NS	N	XX		2	NS	Y	NS	N. C.		
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	3	R	Y	NR		2	12	1	12	2	NS	Y	XX		2	NS	Y	2	NS	N. D.	
1	N	1	N	NR	NR	2	Y	3	Y	3	R	Y	NP		3	R	15	2	12	1	16	3	W	N	NS	Ye/AW	N	1	W	N	NS	Ohio	
1	N	1	N	1	N	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	3	12	1	12	2	NSa	Y	XX		2	NSa	Y	4	Okla.	
1	N	1	N	NR	NR	1	Y	3	N	3	R	N	3	R	Y	NR		3	12	1	12	3	NSa	Y	XX		1	NS	Y	4	Ore.		
1	N	1	N	NR	NR	1	N	3	Y	3	R	Y	3	R	Y	NR		3	12	1	12	3	W	Y	2	A/W	Y	1	NS	N	4	Penna.	
1	N	1cc	N	1†	N	1	Y	3	Y	3	R	Y	3	R	Y	NR		NR		1	12	2	A/W	Y	XX			NSM		NS	R. I.		
1	N	1	N	1†	N	2	Y	3	Y	3	R	Y	3	R	Y	3	R	15	3	12	1	12	3	NS	Y	XX		1	NS	N	4	S. C.	
1	N	NR	NR	NR	NR	3	Y	3	Y	3	R	Y	3	R	Y	NR		NR		1	12	3	NS	Y	XX		1	NS	N	NS	S. D.		
1	N	NR	NR	NR	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	2	12	1	12	2	NS	N	XX		2	NSa	N	4	Tenn.	
1	N	NR	NR	NR	NR	2	Y	3	Y	3	R	Y	3	R	Y	3	R	15	2	12	1	12	3	NS	N	XX		1	NS	N	4	Tex.	
1	N	1	N	1	N	1	Y	3	Y	3	R	Y	3	R	Y	3	R	15	2	12	1	12	3	NSa	N	XX		1	NSa	N	NS	Utah	
1	N	1	N	NR	NR	1	Y	3	Y	3	R	Y	3	R	Y	NR		2	12	1	16	2	NS	Y	2	NS	Y	2	NS	Y	NS	Vt.	
1	Y	1cc	Y	NR	NR	1	Y	3	Y	3	R	Y	3	R	Y	NR		2	12	1	12	2	A/W	Y	2	A/W	Y	1	W	Y	4	Va.	
1	N	2	N	NR	NR	1	Y	3	Y	3	R	Y	3	R	Y	NR		2	12	1	12	1	NS	Y	2	A/W	Y	1	W	N	4	Wash.	
1	N	1	N	1†	N	1	Y	3	Y	3	R	N	NR		3	NS	15	2	12	1	12	NSM		NSM		1	NS	N	NS		W. Va.		
1	N	1	N	NR	NR	1	Y	3	Y	3	R	Y	3	R	Y	3	R	20	2	NS	1	12	2	NSa	Y	NS	NSa	Y	2	W	Y	4	Wisc.
1	N	1	N	NR	NR	3	Y	3	Y	3	R	Y	3	R	Y	NR		NR		NR		NR		NSa	Y	XX		2	NSa	Y	NS	Wyo.	

POWER RATINGS of

Showing maximum and net horsepower, maximum torque, weight

ENGINE MAKE AND MODEL	Number of Cylinders Bore and Stroke (In.)	MAX. BRAKE H.P. at R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	TORQUE		Engine Weight Without Carburetor or Ignition (Lb.)		ENGINE MAKE AND MODEL	Number of Cylinders Bore and Stroke (In.)	MAX. BRAKE H.P. at R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	TORQUE		Engine Weight Without Carburetor or Ignition (Lb.)
		With Bare Engine	With Standard Accessories			Maximum Torque at R.P.M. (Lb. Ft.)						With Bare Engine	With Standard Accessories			Maximum Torque at R.P.M. (Lb. Ft.)		
AUTOCAR										HALL-SCOTT								
377	6-4x5	119-2800		377.0	5.90	292-1400 (BE)	1230			H-130	6-4 1/2 x 5	122-2800	107-2800	425.6	4.96	288-1000 (BE)	1252*	
447	6-4 1/2 x 5 1/2	145-2700		447.0	5.90	352-1300 (BE)	1385			(H) 135	6-4 1/2 x 5	140-2800	122-2800	477.1	5.50	340-1000 (BE)	1265*	
501	6-4 1/2 x 5 1/2	165-2700		501.0	5.90	402-1100 (BE)	1395			(H) 136	6-4 1/2 x 5	157-2600	136-2600	477.1	6.50	380-1600 (BE)	1293	
										(H) 504	6-4 1/2 x 5	180-2500	159-2500	504.0	6.00	425-1600 (BE)	1275	
BUDA										(Bus) (H) 180-1,								
(Bus) HP-326	6-3 1/2 x 4 1/2	78-2400	66-2400	326.0	5.40	220-1100 (BE)	885			180-3	6-5x6	208-2200	193-2200	707.0	6.00	540-1500 (BE)	1786	
(Bus) K-428	6-4 1/2 x 4 1/2	107-2400	95-2400	428.0	5.33	276-1100 (BE)	905			(Bus) (H) 190-2,	6-5 1/2 x 6	220-2200	200-2200	779.0	5.60	625-1300 (BE)	1786	
LO-525	6-4 1/2 x 5 1/2	157-2400	139-2400	525.0	5.00	400-1200 (BE)	1195			(Bus) (H) 190-1,								
6-MO-893	6-5 1/2 x 6	199-2000	170-2000	893.0	5.50	670-1000 (BE)	2400			190-3	6-5 1/2 x 6	235-2200	215-2200	779.0	6.00	640-1400 (BE)	1970	
6-MO-970	6-5 1/2 x 6 1/2	200-1800	171-1800	970.0	5.43	720-800 (BE)	2400			400	6-5 1/2 x 7	286-1800	260-1800	1090.0	5.70	865-1200 (BE)	1950*	
CHEVROLET										HERCULES								
1950	6-3 1/2 x 3 1/2	105-3600	98-3500	235.5	6.70	193-1100 (EA)	596			ZXA	4-2 1/2 x 3	23-3800	19-3800	58.8	6.10	37-1800 (BE)	179	
1950	6-3 1/2 x 3 1/2	102-3600	95-3500	235.5	6.70	193-1100 (EA)	613			ZXB	4-2 1/2 x 3	25-3800	21-3800	64.9	6.10	39-1800 (BE)	179	
1950	6-3 1/2 x 3 1/2	92-3400	85-3300	235.5	6.70		604			IXA	4-3x4	40-3200	34-3200	113.0	5.50	79-2000 (BE)	285	
1950	6-3 1/2 x 3 1/2	92-3400	85-3300	216.5	6.60	176-1000 (EA)	583 ^{AA}			IXB	4-3 1/2 x 4	47-3200	40-3200	133.0	5.50	92-1800 (BE)	293	
CONTINENTAL										JX4E	4-3 1/2 x 4 1/2	52-2900	44-2900	164.0	6.70	121-1400 (BE)	470	
F-4124	4-3x4 1/2	46-3000		123.7	6.50	86-1400 (BE)	395			JX4C	4-3 1/2 x 4 1/2	60-2900	51-2900	188.0	6.70	139-1400 (BE)	470	
F-4140	4-3 1/2 x 4 1/2	52-3000		139.6	6.30	108-1400 (BE)	395			JX4D	4-4x4 1/2	68-2900	57-2900	214.0	6.70	157-1400 (BE)	470	
F-4162	4-3 1/2 x 4 1/2	58-3000		162.4	6.10	122-1600 (BE)	395			OXA	6-3 1/2 x 4 1/2	64-3200	54-3200	190.0	6.50	132-1300 (BE)	440	
F-6186	6-3x4 1/2	59-3000		185.6	6.40	139-1000 (BE)	515			QXB	6-3 1/2 x 4 1/2	69-3200	59-3200	205.0	6.50	142-1400 (BE)	440	
F-6209	6-3 1/2 x 4 1/2	70-3000		209.4	6.10	153-1200 (BE)	515			QXC	6-3 1/2 x 4 1/2	75-3200	66-3200	221.0	6.50	159-400 (BE)	440	
F-6226	6-3 1/2 x 4 1/2	72-3000		226.0	6.00	168-1000 (BE)	515			QXLD	6-3 1/2 x 4 1/2	91-3200	77-3200	236.7	6.50	189-1400 (BE)	445	
M-6271	6-3 1/2 x 4 1/2	89-2800		270.9	6.00	203-1200 (BE)	755			JXE	6-3 1/2 x 4 1/2	91-3200	77-3200	245.0	6.50	184-1400 (BE)	590	
M-6290	6-3 1/2 x 4 1/2	93-2800		289.9	6.00	217-1000 (BE)	755			JXB	6-3 1/2 x 4 1/2	98-3200	83-3200	263.0	6.50	190-1400 (BE)	605	
M-6330	6-4x4 1/2	104-2800		329.4	6.10	245-1000 (BE)	755			JXC	6-3 1/2 x 4 1/2	103-3200	87-3200	282.0	6.50	207-1400 (BE)	605	
B-6371	6-4 1/2 x 4 1/2	100-2600		370.9	6.00	278-1000 (BE)	870			JXD	6-4x4 1/2	113-3000	96-3000	320.0	6.50	240-1200 (BE)	605	
T-6371	6-4 1/2 x 4 1/2	126-2600		370.9	5.78	294-1000 (BE)	1070			JXLD	6-4x4 1/2	131-3200	111-3200	339.0	6.90	272-1400 (BE)	630	
B-6427	6-4 1/2 x 4 1/2	127-2600		427.2	5.90	323-1200 (BE)	875			WXC-3	6-4 1/2 x 4 1/2	131-2600	111-2600	383.0	6.60	296-1400 (BE)	820	
T-6427	6-4 1/2 x 4 1/2	145-2600		427.2	5.85	338-1000 (BE)	1075			WLXC	6-4x4 1/2	123-2600	104-2600	358.0	6.60	275-1200 (BE)	811	
U-6501	6-4 1/2 x 4 1/2	170-2400		501.0	5.90	390-2400 (BE)				WLXC-3	6-4 1/2 x 4 1/2	139-2600	118-2600	404.0	6.60	312-1300 (BE)	825	
R-6513	6-4 1/2 x 5 1/2	170-2600		512.9	5.90	400-1200 (BE)	1525			TDXB	6-4 1/2 x 4 1/2	160-2600	136-2600	474.0	6.50	368-1400 (BE)	1345	
R-6572	6-4 1/2 x 5 1/2	189-2600		571.7	5.90	440-1200 (BE)	1525			RXB	6-4 1/2 x 5 1/2	137-2400	116-2400	501.0	6.50	350-1200 (BE)	1000	
R-6602	6-4 1/2 x 5 1/2	199-2600		602.0	5.80	464-1200 (BE)	1525			RXC	6-4 1/2 x 5 1/2	143-2400	121-2400	529.2	6.50	372-1200 (BE)	1010	
S-6749	6-5 1/2 x 5 1/2	247-2600		748.8	6.10	576-1400 (BE)	1865			RXLC	6-4 1/2 x 5 1/2	146-2400	124-2400	529.2	6.20	408-1100 (BE)	1195	
DODGE										RXLD	6-4 1/2 x 5 1/2	154-2400	131-2400	558.0	6.50	430-1100 (BE)	1195	
T-142, T-144	6-3 1/2 x 4 1/2	96-3600	82-3600	217.8	6.60	172-1200 (BE)	500			RXLDH	6-4 1/2 x 5 1/2	180-2600	153-2600	558.0	6.50	443-1400 (BE)	1470	
T-146	6-3 1/2 x 4 1/2	102-3600	83-3200	230.2	6.70	187-1200 (BE)	525			HXB	6-5x6	159-2000	135-2000	707.0	5.75	502-900 (BE)	1810	
T-164, T-165	6-3 1/2 x 4 1/2	94-3200	83-3200	230.2	6.70	186-1200 (BE)	540			HXC	6-5 1/2 x 6	175-2000	149-2000	779.0	5.75	555-900 (BE)	1810	
T-137	6-3 1/2 x 4 1/2	94-3200	78-3200	230.2	6.70	186-1200 (BE)	570			HXD	6-5 1/2 x 6	202-2000	172-2000	855.0	5.75	645-900 (BE)	1830	
T-148, TX-148										HXE	6-5 1/2 x 6	227-2000	193-2000	935.0	6.20	750-1000 (BE)	1830	
T-152, TX-152	6-3 1/2 x 4 1/2	109-3600	91-3200	236.6	6.60	192-1200 (BE)	575			INTERNATIONAL								
T-150, TX-150										SD-220	6-3 1/2 x 3 1/2	100-3600	90-3600	220.5	6.50	167-1200 (EA)	607	
T-154, TX-154	6-3 1/2 x 4 1/2	114-3600	98-3200	250.6	6.60	204-1200 (BE)	590			SD-240	6-3 1/2 x 4, 02	108-3600	93-3400	240.3	6.50	186-1100 (EA)	607	
T-156	6-3 1/2 x 4 1/2	122-3200	106-3200	306.0	6.46	245-1200 (BE)	850			BD-269	6-3 1/2 x 4 1/2	100-3000	88-2800	289.1	6.30	216-1000 (EA)	781	
T-158, TX-158	6-3 1/2 x 5	128-3000	111-2800	331.3	6.46	270-1200 (BE)	850			RD-372	6-4 1/2 x 4 1/2	144-3200	128-2850	372.1	6.30	280-1000 (EA)	937	
FORD										RD-408	6-4 1/2 x 4 1/2	154-3200	138-2250	405.9	6.30	314-1000 (EA)	942	
(Bus) 8MB	6-3 1/2 x 4, 4	104-3000	86-3000	254.0	6.8	212-1200 (BE)	539			RD-450	6-4 1/2 x 5	162-3000	146-2600	451.0	6.20	354-1000 (EA)	948	
7HT	6-3 1/2 x 4, 4	95-3300	87-3100	226.0	6.8	180-1200 (BE)	500			JACOBS								
8RT	6-3 1/2 x 3 1/2	100-3800	90-3500	239.0	6.8	180-2000 (BE)	534			O-380-U	6-4 1/2 x 4	150-2800		361.0	6.50	310-1700 (BE)	425	
8EQ	6-3 1/2 x 4 1/2	145-3600	127-3300	337.0	6.4	255-1800 (BE)	780			LE ROI								
8MTH	6-3 1/2 x 4, 4	110-3400	100-3150	254.0	6.80	212-1200 (BE)	523			H540	8-4 1/2 x 4 1/2	175-2400	171-2400	540.0	5.6	417-900 (EA)	1300	
G. M. C.										MACK								
228	6-3 1/2 x 3 1/2	96-3200	86-3200	228.0	6.75	178-1200 (BE)				EN354A†	6-3 1/2 x 5	119-2700	102-2700	354.0	5.50	246-1300 (EA)	985	
248	6-3 1/2 x 3 1/2	110-3600	95-3200	248.5	6.75	95-1000 (BE)				EN354A†	6-3 1/2 x 5	121-2700	108-2700	354.0	5.50	257-1400 (EA)	985	
270	6-3 1/2 x 4	120-3600	103-3200	269.5	6.75	212-1600 (BE)				EN431A	6-4 1/2 x 5 1/2	142-2500	124-2500	431.0	6.32	311-1200 (EA)	1525	
318	6-3 1/2 x 4 1/2	136-3400	113-3200	308.2	6.50	245-800 (BE)				EN471A	6-4 1/2 x 5 1/2	150-2400	134-2400	471.0	6.12	360-1000 (EA)	1600	
360	6-4 1/2 x 4 1/2	150-3200	127-3000	360.8	6.50	289-800 (BE)				EN510A	6-4 1/2 x 5 1/2	158-2400	140-2400	510.0	6.07	383-1000 (EA)	1555	
428	6-4 1/2 x 5	177-3200	149-3000	425.6	6.50	337-900 (BE)				EN510A	6-4 1/2 x 5 1/2	158-2400	139-2400	510.0	6.07	366-1000 (EA)	1555	
503	6-4 1/2 x 5 1/2	190-3000	165-2800	502.7	6.50	415-900 (BE)				ENF510A	6-4 1/2 x 5 1/2	161-2550	150-2550	510.0	6.34	398-1200 (EA)	1594	
										ENF672	6-4 1/2 x 6	187-2400	165-2000	672.0	6.15	490-1150 (EA)	1696	

ABBREVIATIONS
*—With ignition and carburetor.

**—Supercharged.
—Without fan or muffler.

BE—Bare engine.
EA—Engine with standard accessories.

^{AA}—Weight for 1/2-ton trucks, 573 lb.
(H)—Horizontal.

TRUCK and BUS ENGINES

and piston displacement for both gasoline and diesel types

ENGINE MAKE AND MODEL	Number of Cylinders Bore and Stroke (In.)	MAX. BRAKE H.P. at R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	TORQUE		Engine Weight Without Carburetor or Ignition (Lb.)	ENGINE MAKE AND MODEL	Number of Cylinders Bore and Stroke (In.)	MAX. BRAKE H.P. at R.P.M.		Piston Displacement (Cu. In.)	Compression Ratio	TORQUE		Engine Weight Without Carburetor or Ignition (Lb.)
		With Bare Engine	With Standard Accessories			Maximum Torque at R.P.M. (Lb. Ft.)	Maximum Torque at R.P.M. (Lb. Ft.)				With Bare Engine	With Standard Accessories			Maximum Torque at R.P.M. (Lb. Ft.)	Maximum Torque at R.P.M. (Lb. Ft.)	
MACK—Continued																	
EN707A††	6-5x6	196-2000	179-2000	707.0	6.10	544-1100 (EA)	1803		CUMMINS	6-4x5	100-2200	85-2200	377	18.00	275-1200	1640	
EN707A†	6-5x6	191-2000	166-2000	707.0	6.10	538-1100 (EA)	1803		A-600	4-4½x6	100-1800	83-1800	448	17.00	340-800	1840	
ENF707A	6-5x6	209-2250	199-2250	707.0	6.10	561-1200 (EA)	1854		H-600	6-4½x6	150-1800	125-1800	672	17.00	500-800	2595	
REO									**HS-600	6-4½x6	200-1800	175-1800	672	14.00	625-1400	2780	
GC-245	6-3½x4½	89-3100		245.0	6.20	191-1200 (BE)	763*		NH-800	6-5½x6	200-2100	174-2100	743	15.50	535-1400	2680	
GC-288	6-3½x5	96-3000		288.0	6.20	225-1200 (BE)	780*		**NHS-600	6-5½x6	275-2100	240-2100	743	13.50	710-1600	2975	
GC-310	6-3½x5	101-3000		310.0	6.20	243-1000 (BE)	785*		HR-600	4-5½x6	165-1800	141-1800	743	15.50	540-1000	2600	
OA	6-4½x4½	140-3200	128-3200	331.0	6.40	260-2200 (EA)	872		HR-400	4-5½x6	110-1800	94-1800	495	15.50	360-1050	1840	
OA	6-3½x4½	124-3300	110-53300	292.0	6.50	218-1200 (EA)	830		**HRS-600	6-5½x6	225-1800	191-1800	743	13.50	695-1000	2780	
TWIN COACH									**NHRS-600	6-5½x6	300-2100	255-2100	743	12.00	800-1400	2925	
FTC-180	6-4½x4½	180-2800	162-2800	404.0	7.50	380-1600 (EA)	950		NVH-1200	12-5½x6	400-2100	350-2100	1486	15.50	1075-1200	5500	
WAUKESHA									**NVHS-1200	12-5½x6	550-2100	480-2100	1486	13.50	1420-1600	5000	
GENERAL MOTORS																	
(12) FC	4-3½x4	32-2600	24-1800	133.0	5.58	86-1200 (BE)	290		2-71	2-4½x5		85-2000	142	17.00	200-1200	770	
(12) XAH	4-3½x4½	43-2200	36-1800	185.0	5.50	120-900 (BE)	385		3-71	3-4½x5		100-2000	213	17.00	300-1200	1245	
190GL	6-3½x4	61-1800	61-1800	265.0	6.70	210-900 (BE)			4-71	4-4½x5		133-2000	284	17.00	400-1200	1380	
(11) 8BZ	6-4x4½	105-3000	89-3000	320.0	5.75	235-1000 (BE)	706		6-71	6-4½x5		200-2000	426	17.00	600-1200	1695	
(11) 140-GK	6-4½x5½	142-2250	127-2250	525.0	6.00	425-1000 (BE)	1390		HARNISCHFEGER								
(11) 6SRKR	6-4½x5½	126-2250	109-2250	517.0	5.50	369-600 (BE)	1225		187C	1-4½x5½	28-1400	27-1400	87	16.00	105-800	950	
(11) 145-GK	6-5½x6	186-2000	172-2000	779.0	6.20	590-1200 (BE)	1810		287C	2-4½x5½	54-1400	53-1400	174	16.00	210-800	1030	
(12) 6WAK	6-6½x8½	235-1800	193-1300	1197.0	5.20	885-900 (BE)	3050		387C	3-4½x5½	83-1400	80-1400	261	16.00	315-800	1300	
(11) 145GZ	6-5½x6	220-2000	206-2000	817.0	6.00	615-1200 (BE)	1810		487C	4-4½x5½	110-1400	105-1400	348	16.00	440-800	1550	
6MZA	6-4½x4½	128-2800	113-2800	404.0	5.90	290-1000 (BE)	920		687C	6-4½x5½	165-1400	158-1400	522	16.00	630-800	1900	
** (11) 140GK	6-4½x5½	176-2800	159-2600	525.0	6.40	435-800 (BE)	1390		HERCULES								
** (11) 140GZ	6-4½x5½	188-2800	171-2600	554.0	6.40	460-800 (BE)	1390		D1XC	2-4x4½	27-1800	23-1800	113	15.50	81-1400	550	
** (11) 145GK	6-5½x6	225-2400	207-2400	779.0	6.20	595-1400 (BE)	1810		D1XD	2-4½x4½	27-1600	23-1600	127	15.50	81-1300	580	
180GL	6-4½x3¾	36-2000	31-2000	144.0	6.80	105-800 (EA)	450		D1X4B	4-3½x4	46-3000	39-3000	133	15.00	98-1600	550	
**195GKA	6-4½x4	122-3000	110-3000	320.0	6.20	230-1600 (EA)	775		4-3½x4	4-3½x4	57-3000	48-3000	165	15.00	122-1600	550	
195GK	6-4½x4	105-2400	96-2400	320.0	6.20	232-1500 (EA)	775		D1X4D	4-3½x4½	62-2600	53-2600	199	15.00	142-1400	750	
WHITE									DOOC	4-4x4½	70-2600	60-2600	226	15.00	162-1400	750	
110A	6-3½x4½	100-3100		270.0	6.21	200-1200 (BE)	1075		DOOD	4-4½x4½	79-2600	68-2600	255	15.00	182-1400	750	
116A	6-3½x4½	110-3100		298.0	6.68	230-1200 (BE)	1075		D1X6D	6-3½x4	92-3000	79-3000	249	15.50	192-1800	780	
120A	6-3½x4½	114-3000		318.0	6.50	250-1200 (BE)	1070		D1X6B	6-3½x4½	77-2600	68-2600	260	15.00	179-1300	950	
130A	6-4x4½	120-3000		340.0	6.60	270-1200 (BE)	1075		D1JXC	6-3½x4½	83-2600	71-2600	298	15.00	208-1300	950	
140A	6-3½x5½	125-3000		362.0	6.03	285-1400 (BE)	1070		D1JXH	6-3½x4½	99-2600	84-2600	298	15.00	320-1300	930	
150A	6-4x5½	135-3000		386.0	6.45	315-1300 (BE)	1070		D1WXC	6-4x4½	118-2600	100-2600	358	15.00	284-1600	1350	
260A	6-4x5	170-2800		451.0	6.25	350-1200 (BE)	1409*		D1WXD	6-4½x4½	135-2600	115-2600	404	15.00	320-1600	1350	
280A	6-4x5	184-2800		504.0	6.50	405-1200 (BE)	1442*		D1WXL	6-4½x5	142-2600	121-2600	426	15.00	316-1600	1350	
(Bus) 280TA	6-4x5	175-2700		504.0	6.00	400-1200 (BE)	1721		(Bus) D1WXLDF	6-4½x5	142-2600	121-2600	426	15.00	316-1600	1350	
(Bus) 24AK	12-4½x4½	210-2700		681.0	6.00	500-1200 (BE)	2090		DRXB	6-4½x5½	132-2200	112-2200	474	15.00	340-1200	1600	
WILLYS									DRXC	6-4½x5½	147-2200	125-2200	529	15.00	395-1200	1800	
4-63	4-3½x4½	63-4000		134.2	6.48	105-2000 (BE)	344		DFXB	6-5x6	190-2100	162-2100	707	14.80	530-1350	2500	
DIESELS									DFXC	6-5½x6	204-2100	173-2100	779	14.80	585-1350	2500	
BUDA									DFXD	6-5½x6	217-2100	184-2100	855	14.80	645-1200	2500	
6BD-230	6-3½x4½	60-2400	52-2400	230	15.30	155-1400	860		DFXE	6-5½x6	228-2100	194-2100	895	14.80	680-1200	2500	
6BD-273	6-3½x4½	75-2400	65-2400	273	15.00	197-1300	1133		DFXH	6-5½x6	260-2100	221-2100	935	14.80	750-1200	2575	
6-DT-317	6-3½x5½	90-2300	75-2300	317	14.50	224-1500	1435		(Bus) DFXHF	6-5½x6	260-2100	221-2100	935	14.80	750-1200	2575	
6-DT-468	6-4½x5½	113-2000	97-2000	468	14.20	268.5-1100	2850		DNX-V8	8-6½x6	400-2100	340-2100	1468	14.80	1100-1200	4200	
6-DC-844	6-5½x6½	200-2000	176-2000	844	13.00	620-1200			MACK								
**6-DCS-844	6-5½x6½	245-2000	211-2000	844		690-1400			END-457	6-4½x5½	112-2200	103-2200	457	13.86	328-1300	1887	
8-DC-1125	8-5½x6½	240-1800	212-1800	1125	13.00	800-1100			END-510	6-4½x5½	138-2400	123-2400	510	14.92	345-1400	1939	
**8DCS-1125	8-5½x6½	300-2000	300-2000	1125		970-1250			END-672	6-4½x6	165-2000	154-2000	672	14.62	480-1200	2201	
CONTINENTAL									SHEPPARD								
TD-6427	6-4½x4½	112-2400		427	14.5	300-1200	1270		12D, E & F	6-4½x5	100-2000	75-1800	426	18.0	325-1200	1790	
RD-6572	6-4½x5½	150-2200		572	14.5	400-1200	1785		WAUKESHA								
									180DAC	4-3½x3¾	35-2400	28-2400	129	17.00	90-1400	520	
									190DLB	6-3½x4	64-2200	53-1800	265	15.3	184-1200		
									148DK	6-5½x6	168-2000	138-2000	779	17.5	530-1200	2150	
									6WAKD	6-6½x6½	225-1600	185-1600	1197	16.5	845-900	3400	

†—Updraft carburetor.
††—Downdraft carburetor.

TRANSMISSION

TRANSMISSIONS MAKE AND MODEL	No. of Forward Speeds	Direct Drive on	GEAR RATIOS							Power Take-off, Opening
			Low	Second	Third	Fourth	Fifth	Reverse	High Reverse	
AUTOCAR										
DF-4, DFU-4	4	4	5.78	3.52	1.83	1.00		7.23		R-L
DF-5, DFU-5	5	4	5.78	3.52	1.83	1.00	.72	7.23		R-L
TF-4, UTF-4	4	4	5.90	3.60	1.84	1.00		7.37		R-L
TF-5, UTF-5	5	4	5.90	3.60	1.84	1.00	.75	7.37		R-L
BH-31 Aux.	3	2	1.33	1.00	.25					R
BROWN-LIPE (1)										
*5331	3	3	3.80	1.91	1.00			4.24		R-L
3541	4	4	4.57	2.42	1.73	1.00		4.07		R-L
6241	4	4	6.63	3.19	1.70	1.00		7.53		R-L
6241-A	4	4	7.15	3.44	1.83	1.00		8.13		R-L
6241-B	4	4	4.32	2.67	1.67	1.00		4.90		R-L
6440	4	3	3.90	1.88	1.00	.754		4.43		R-L
7741	4	4	6.27	3.46	1.73	1.00		6.15		R-L
7840	4	3	3.72	2.06	1.00	.77		4.64		R-L
7841	4	4	5.24	2.89	1.71	1.00		6.81		R-L
8041	4	4	6.25	3.47	1.75	1.00		6.39		R-L
8045	4	4	6.25	3.47	1.75	1.00		6.39		R-L
8241, 8245	4	4	5.19	2.88	1.72	1.00		5.31		R-L
8440, 8445	4	3	3.67	1.85	1.00	.77		3.75		R-L
*4552	5	5	7.92	4.57	2.97	1.66	1.00	8.39		R-L
*4552-A	5	5	6.93	4.00	2.31	1.45	1.00	7.34		R-L
*4553	5	4	6.10	3.52	1.81	1.00	.77	6.46		R-L
*6252	5	5	7.79	4.67	3.06	1.72	1.00	7.81		R-L
*6252-A	5	5	6.07	3.41	1.79	1.34	1.00	6.09		R-L
*6252-B	5	5	7.79	4.36	2.29	1.45	1.00	7.81		R-L
*6252-C	5	5	6.07	3.65	2.38	1.34	1.00	6.09		R-L
*6253	5	4	6.07	3.41	1.79	1.00	.78	6.09		R-L
*6752	5	5	5.08	2.85	1.78	1.33	1.00	5.10		R-L
*6753	5	4	5.08	3.05	1.78	1.00	.69	5.10		R-L
7751	5	4	6.27	3.46	1.73	1.00	.67	8.15		R-L
7851	5	4	5.24	2.89	1.71	1.00	.69	6.81		R-L
7851-A	5	4	5.24	2.89	1.71	1.00	.79	6.81		R-L
8051, 8055	5	4	6.25	3.47	1.75	1.00	.67	6.39		R-L
8051-A, 8055-A	5	4	6.25	3.47	1.75	1.00	.83	6.39		R-L
8251, 8255	5	4	5.19	2.88	1.72	1.00	.69	5.31		R-L
8531-Aux.	3	2	2.00	1.00	.72					R-L
8531-A Aux.	3	2	1.52	1.00	.72					R-L
8531-B Aux.	3	2	2.36	1.00	.85					R-L
8531-C Aux.	3	2	1.28	1.00	.85					R-L
8231 Aux.	3	2	2.14	1.00	.69					R-L
8231-A Aux.	3	2	1.24	1.00	.86					R-L
8231-B Aux.	3	2	2.14	1.00	.86					R-L
8231-C Aux.	3	2	1.24	1.00	.69					R-L
8231-D Aux.	3	2	2.14	1.00	.74					R-L
8231-E Aux.	3	2	1.24	1.00	.74					R-L
8231-F Aux.	3	2	1.50	1.00	.86					R-L
703 Aux.	3	2	2.62	1.00	.75					R-L
703-A Aux.	3	2	1.25	1.00	.84					R-L
703-B Aux.	3	2	2.62	1.00	.84					R-L
703-C Aux.	3	2	1.25	1.00	.75					R-L
703-D Aux.	3	2	1.50	1.00	.75					R-L
703-E Aux.	3	2	2.29	1.00	.75					R-L
703-F Aux.	3	2	1.50	1.00	.84					R-L
8031-A Aux.	3	2	2.59	1.00	.84					R-L
8035-A	3	2	2.59	1.00	.79					R-L
8035-B	3	2	2.59	1.00	.75					R-L
8035-C	3	2	2.59	1.00	.75					R-L
8035-D	3	2	2.24	1.00	.84					R-L
8035-E	3	2	2.24	1.00	.79					R-L
8035-F	3	2	2.24	1.00	.75					R-L
8035-G	3	2	1.29	1.00	.84					R-L
8035-H	3	2	1.29	1.00	.79					R-L
8035-I	3	2	1.29	1.00	.75					R-L
8035-J	3	2	1.29	1.00	.75					R-L
8035-K	3	3	2.59	1.34	1.00					R-L
8035-L	3	3	2.24	1.34	1.00					R-L
CHEVROLET										
3-Speed	3	3	2.94	1.68	1.00			2.94		No
4-Speed	4	4	7.06	3.58	1.71	1.00		6.78		L
CLARK										
141-T	3	3	3.46	1.71	1.00			4.25		R
170-FS	4	4	6.57	3.58	1.73	1.00		7.88		R-L
142-T	3	3	3.46	1.71	1.00			4.25		R
186-F	4	4	6.35	2.31	2.40	1.00		7.54		R-L
CLARK-cont.										
187-F	4	4	5.00	2.61	1.89	1.00		5.94		R-L
204-V	5	5	7.58	4.38	3.05	1.72	1.00	7.51		R-L
204-VO	5	5	6.06	3.50	1.80	1.00	.799	6.00		R-L
207-VO	5	5	6.06	3.50	1.80	1.00	.86	6.00		R-L
208-V	5	5	7.58	4.38	3.05	1.48	1.00	7.51		L
231-F	4	4	6.35	3.90	1.97	1.00		7.41		R-L
233-F	4	4	6.35	3.38	1.73	1.00		7.41		R-L
271-T	3	3	4.06	1.93	1.04			4.50		No
290-V	5	5	7.88	4.41	2.63	1.48	1.00	7.88		R-L
290-VO	5	5	7.00	3.93	1.90	1.00	.788	7.00		R-L
291-V	5	5	7.00	3.93	2.34	1.54	1.00	7.00		R-L
330-F	4	4	4.88	3.09	1.73	1.00		4.06		No
334-F	4	4	4.35	2.75	1.71	1.00		3.62		No
333-V	5	5	5.22	3.30	2.05	1.42	.96	4.45		No
185-F	4	4	6.35	3.31	1.73	1.00		7.54		R-L
200-V	5	5	7.58	4.38	2.40	1.48	1.00	6.11		R-L
200-VO	5	4	6.06	3.50	1.91	1.00	.799	4.87		R-L
205-V	5	5	7.58	4.38	2.40	1.48	1.00	7.51		R-L
205-VO	5	4	6.06	3.50	1.91	1.00	.799	6.00		R-L
230-F	4	4	5.00	3.07	1.71	1.00		5.83		R-L
270-V	5	5	7.88	4.46	2.63	1.48	1.00	7.88		R-L
270-VO	5	4	7.00	3.97	1.90	1.00	.788	7.00		R-L
326-V	5	5	8.05	4.34	2.80	1.67	1.00	8.05		R-L
326-VO	5	4	7.08	3.82	1.85	1.00	.788	7.08		R-L
DODGE										
N.P.-88490, 88840,										
88770	3	3	3.3	1.78	1.00			4.3		No
N.P.-89150, 88690,										
88500, 88790, 39760,	4	4	6.4	3.09	1.69	1.00		7.82		R
N.P.-88570, 88850	4	4	6.4	3.09	1.69	1.00		7.61		R
N.P.-88580, 88860,										
88700, 88920	5	5	7.41	4.32	2.38	1.52	1.00	7.32		R
N.P.-88730, 89180,										
88740, 88910	5	4	6.25	3.64	1.89	1.00	.782	6.17		R
N.P.-88220, 88450	5	5	7.58	4.38	2.39	1.48	1.00	7.51		R-L
N.P.-88230, 88440	5	4	6.06	3.5	1.8	1.00	.799	6.0		R-L
Clark-290V2	5	5	7.88	4.41	2.63	1.48	1.00	7.88		R-L
Clark-290-V0	5	4	7.0	3.97	1.9	1.00	.788	7.0		R-L
FORD										
21C-A	3	3	2.819	1.604	1.00			3.625		No
8D-8J	3	3	3.714	1.871	1.00			4.588		No
51Y-A2-41T-A2	4	4	6.40	3.09	1.69	1.00		7.820		R
8MTM	4	4	6.40	3.09	1.69	1.00		7.82		R
7EO	5	4	6.06	3.50	1.80	1.00	.799	6.00		R-L
7EQH	5	5	7.58	4.38	2.40	1.48	1.00	7.51		R-L
F.W.D.										
H	5	5	8.23	4.40	2.46	1.41	1.00	8.45		R-L
H	5	4	5.82	3.13	1.75	1.00	.7264	6.07		R-L
H-Aux	2	2	1.25	1.00						
H-Aux	2	2	2.82	1.00						
U. S.	5	5	9.95	5.81	3.15	1.85	1.00	8.97		R-L
U-Aux	2	2	1.25	1.00						
U-Aux	2	2	2.82	1.00						
M	5	5	7.30	4.42	2.74	1.47	1.00	1.00		R-L
M-Aux	2	2	2.12	1.00						
WG-T94	4	4	5.901	3.09	1.69	1.00		7.213		R
FULLER										
4A-86, 4A1-86	4	4	6.54	3.27	1.76	1.00		7.24		R-L
4B-86, 4B1-86	4	4	5.55	3.27	1.76	1.00		6.58		R-L
4A-860, 4A1-860	4	3	3.72	1.86	1.00	(a)		4.12		R-L
4A-112	4	4	6.54	(b)	1.76	1.00	(c)			R-L
5A-33, 5B-33	5	5	7.53	4.30	2.52	1.42	1.00	7.37		(d)
5A-330, 5B-330	5	4	6.10	3.48	1.795	1.00	.768	5.96		(e)
5A-43	5	5	8.03	4.61	2.46	1.41	1.00	8.00	4.71	R-L
5A-430	5	4	6.52	3.33	1.77	1.00	.771	6.50	3.33	R-L
5A-62	5	5	8.07	4.67	2.62	1.38	1.00	8.12	4.74	R-L
5A-620	5	4	7.07	3.50	1.72	1.00	.778	7.11	3.55	R-L
5A-65, 5C-65	5	5	8.08	4.67	2.62	(f)	1.00	8.12	4.74	R-L
5A-650, 5C-650	5	4	6.37	3.40	1.74	1.00	.788	6.40	3.35	

RATIOS

TRANSMISSIONS MAKE AND MODEL	No. of Forward Speeds	Direct Drive on	GEAR RATIOS							Power Take-off, Opening
			Low	Second	Third	Fourth	Fifth	Reverse	High Reverse	
FULLER—cont.										
AR-Aux.	1	1	1.00					1.00		
AR-1.63 Aux.	2	1	1.63	1.00						
2A-62 Aux.	2	1	(n)	1.00						
2B-62 Aux.	2	1	1.33	1.00						
2A-92 Aux.	2	1	2.298	1.00						
2B-92 Aux.	2	1	1.313	1.00						
3A-65 Aux.	3	1	2.221	1.00	.754				R	
3B-65 Aux.	3	1	1.239	1.00	.804				R	
3A-92 Aux.	3	1	2.09	1.00	.754				R	
3B-92 Aux.	3	1	1.235	1.00	.836				R	
3T-92 Aux.	3	1	2.09	1.00	.754				(k)	
STUDEBAKER										
673579	3	3	3.34	1.85	1.00			4.53		
673519	4	3	3.34	1.85	1.00	.700		4.53		
676044-678794	4	4	6.40	3.09	1.69	1.00		7.82		R
678790	4	4	5.90	3.09	1.69	1.00		7.21		R
WARNER										
T9	4	4	6.40	3.09	1.69	1.00		7.82		R
T9A	4	4	5.901	3.09	1.69	1.00		7.213		R
T9B	4	4	6.40	3.09	2.21	1.00		7.82		R
T9C	4	4	6.40	4.07	2.89	1.00		7.82		R
T87D	3	3	3.714	1.871	1.00			4.588		No
T90A-T90C	3	3	2.796	1.551	1.00			3.796		No

TRANSMISSIONS MAKE AND MODEL	No. of Forward Speeds	Direct Drive on	GEAR RATIOS							Power Take-off, Opening
			Low	Second	Third	Fourth	Fifth	Reverse	High Reverse	
WARNER—cont.										
T90B	3	3	3.34	1.85	1.00			4.531		No
T90D	3	3	3.339	1.851	1.00			4.531		No
T90E	3	3	3.34	1.851	1.00			4.531		No
T97	4	4	6.398	3.092	1.686	1.00		7.820		R
T98	4	4	6.398	3.092	1.686	1.00		7.820		R
WATSON										
41-Aux.	3	2	1.26	1.00	.830					Yes
42-Aux.	3	2	1.49	1.00	.830					Yes
43-Aux.	3	2	2.11	1.00	.830					Yes
44-Aux.	3	2	1.26	1.00	.750					Yes
45-Aux.	3	2	1.49	1.00	.750					Yes
46-Aux.	3	2	2.11	1.00	.750					Yes
47-Aux.	3	3	1.49	1.20	1.00					No
48-Aux.	3	3	2.11	1.20	1.00					No
WHITE										
424B	4	4	6.35	3.31	1.73	1.00		7.54		R
418B	4	4	6.35	3.38	1.73	1.00		7.41		R-L
502B	5	5	7.58	4.38	2.40	1.48	1.00	7.51		R-L
552B	5	4	6.06	3.50	1.91	1.00	.799	6.00		R-L
507B	5	4	7.68	4.41	2.63	1.48	1.00	7.88		R-L
557B	5	5	7.00	3.93	1.90	1.00	.788	7.00		R-L
506B	5	5	8.08	4.67	2.62	1.38	1.00	8.12		R-L
556B	5	4	6.37	3.40	1.74	1.00	.788	6.40		R-L

ABBREVIATIONS

(1)—Spicer Mfg. Co.

*—Transmissions Synchronized.

L—Left side opening.

R—Right side opening.

R-L—Right and left side openings.

(g)—Ratios beyond fifth gear as follows:

6th, 2.30; 7th, 1.76; 8th, 1.462 or 1.711; 9th, 0.00; 10th, 6.36 or .744; Low Rev., 14.93 or 11.64; High Rev., 6.49 or 5.06.

(a)—Optional overdrive .76 or .65 to one.

(b)—Optional second gear 3.27 or 3.08 to one.

(c)—Optional low reverse 6.49 or 5.06 to one.

(h)—Ratios beyond fifth gear as follows:

6th, 1.76; 7th, 1.31; 8th, 1.00; 9th, .835 or .976; 10th, .636 or .744; Low Rev., 8.52 or 6.64; High Rev., 6.49 or 5.06.

(d)—Right side only on Model 5A-33—Right and left side on 5B-33.

(e)—Right side only on Model 5A-330—Right and left side on 5B-330.

(f)—Optional fourth gear 1.38 or 1.69 to one.

(k)—Front or Rear—Full Torque.

(m)—8.12 and 4.74.

(n)—1.58 or 2.00.

COMPONENT PARTS

Continued from Page 114

Line Number	TRUCK MAKE AND MODEL NUMBER	POWER PLANT ACCESSORIES						ELECTRICAL EQUIPMENT				CLUTCH Make and Model Number	UNIVER-SALS Make and Model Number	RUNNING GEAR					
		ENGINE Make and Model	Governor Make (If Standard)	Air Cleaner Make (If Standard)	Oil Filter Make (If Standard)	CARBU-RETOR Make and Model Number	Fuel Feed System Make	Radiator Make	Ignition System Make	Generator—Starter Make	Battery—Make			STEERING GEAR Make and Model Number	Hand Brakes Make of Actuation	Brake Drum Make	Wheels—Make	Springs—Make	Frame—Make
186	STERLING—(Cont.)																		
187	HWS235	Wau 145GK	Wau	Don	DeL	Zen 28-16	AC	Yng	DR	DR	Nat	LR 15 in. SP	Spl 1700	Gem 550	Own	Tim	Bdd	Mar	
188	HWS160H	Cum HB600	Cum	Don	Cum		Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spl 1700	Ro TA71	Own	Tim	Bdd	Mar	
189	HWS235H	Cum HB600	Cum	Don	Cum		Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spl 1700	Gem 550	Own	Tim	Bdd	Mar	
190	HCS195	Wau 140GK	Wau	Don	DeL	Zen 1N167SJ	AC	Mod	DR	DR	Nat	LR 14 in. SP	Spl 1700	Ro TA71	Own	Tim	Bdd	Mar	
191	HCS265, HCS297, HCS330	Wau 145GK	Wau	Don	DeL	Zen 28-16	AC	Yng	DR	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Bdd	Mar	
192	HCS195H	Cum HB600	Cum	Don	Cum		Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spl 1700	Ro TA71	Own	Tim	Bdd	Mar	
193	HCS265H, HCS297H, HCS330H	Cum HBD600	Cum	Don	Cum		Cum	Yng	DR	DR	Nat	LR 15 in. SP	Bld 70N	Gem 550	Own	Tim	Bdd	Mar	
194	HCS340H	Cum NHB600	Cum	Don	Cum		Cum	Yng	DR	DR	Nat	LR 15 in. SP	Spl 1800	Gem 550	Own	Tim	Day	Mar	
195	STUDEBAKER																		
196	2R5, 2R10	Own 1R	Own	2R	Uni	Car BBR1633S	AC	McC	AL	AL	WII	B&B 9A7	Spl 1270	Ro TA12		Bdd	Bdd	MW	
197	2R15	Own 2R	Own	2R	Uni	Car BBR1633S	AC	McC	AL	AL	WII	B&B 9A7	Spl 1358	Ro TA14		Bdd	Bdd	Own	
198	2R16A	Own 4R	Own	4R	Uni	CarBBR1606AA	AC	McC	DR	DR	WII	ini "G"	Spl 1358	Ro TA14		MW	MW	Own	
199	2R17A	Own 4R	Own	4R	Uni	CarBBR1606AA	AC	McC	DR	DR	WII	ini "G"	Spl 1358	Ro TA14		MW	MW	Own	
200	WARD LA FRANCE																		
201	D1	Con T6427	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 14 in. SP	Bld 6N	Ro TA86		Tim	Day	Mar	
202	D1C	Con T6427	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 14 in. SP	Bld 6N	Ro TA71		Tim	Day	Mar	
203	D2K, D2KT2, D2Z	Wau 140GK	Hof	Uni	Mar	Zen 29W14	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spl 1700	Ro TA71		Tim	Day	Mar	
204	D3, D3T8	Con R6572	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spl 1700	Ro TA71		Tim	Day	Mar	
205	D3S, D3ST8	Con R6602	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spl 1700	Ro TA71		Tim	Day	Mar	
206	D5, D5T2, D5T8	Cum HB600							DR	DR	AL	LR 15 in. SP	Spl 1700	Ro TW74		Tim	Day	Mar	
207	D5N	Cum NHB600							DR	DR	AL	LR 15 in. SP	Spl 1700	Ro TW74		Tim	Day	Mar	
208	D1T2	Con T6427	Hof	Uni	Mar	Zen 29W16	AC	Pfx	AL	AL	AL	LR 14 in. SP	Spl 16 or 1700	Ro TA71		Tim	Day	Mar	
209	D2KT8	Wau 140GK	Hof	Uni	Mar	Zen 29W14	AC	Pfx	AL	AL	AL	LR 15 in. SP	Spl 1700	Ro TW74		Tim	Day	Mar	
210	WILLIS-OVERLAND																		
211	C1-3A Jeep	Own			Oak	Fram	Car W0596S	AC	Har	AL	AL	AW	Aub 8501-23	Spl 1261	Ro T13108	Spl	Khm	Khm	
212	4-WD Truck	Own			Oak	Fram	Car YF	AC	Har	AL	AL	AW	Aub 8501-19	Spl 1261	Ro T13017	Ben	Khm	Khm	
213	473 Series	Own			AC		Car YF	AC	Har	AL	AL	AW	Aub 8501-19	Spl 1261	Ro T13088	Ben	Khm	Khm	

STATE SIZE and

STATE	SIZE RESTRICTIONS							GROSS WEIGHT	(See Boxed NOTE)	PRACTICAL GROSS WEIGHT LIMITS												(In thousands of pounds)	
	Width (Inches)	Height (Feet)	LENGTH			Minimum Tandem Axle Spacing	(LEGAL LIMITS)	Pounds Per Inch of Tire Width	Per Axle (1000 lb.)	Below Limits Apply to Pneumatic Tires Unless Otherwise Specified													
			Single Unit	Tractor Semi-Trailer	Other Combinations					4-Wheel Single Unit	6-Wheel Single Unit	4-Wheel Tractor 2-Wheel Semi-Tr.	4-Wheel Tractor 4-Wheel Semi-T.	6-Wheel Tractor 4-Wheel Semi-T.	4-Wheel Truck 4-Wheel Trailer	4-Wheel Truck 6-Wheel Trailer	6-Wheel Truck 4-Wheel Trailer	6-Wheel Truck 6-Wheel Trailer	4-Wheel Tractor 2-Wheel Semi-T. 4-Wheel Trailer	4-Wheel Tractor 4-Wheel Semi-T. 4-Wheel Trailer	6-Wheel Tractor 4-Wheel Semi-T. 6-Wheel Trailer		
Ala. TVX	96	m 12½	35	45	NP	½	NS	600	18	38	*46.9	*53.9	*53.9	*53.9	NP	NP	NP	NP	NP	NP	NP	NP	
Ariz. X	102	13½	35	65	65	1½	NS	700	18	36	*53.6	*54	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	*77.6	
Ark. VX	96	12½	35ak	50	60	1 or ½	48	NS	18	36	50	54	64.6	64.6	72	73.2	73.2	73.2	NP	NP	NP	NP	
Cal. X	96	13½	35k	60	60	NR	NS	NS-P 600-S	18	36	50	54	68	76.8	72	76.8	76.8	76.8	76.8	76.8	76.8	76.8	
Colo. X	96	12½	35	60	60	2	40	500	18-I 16-J	30	46	*54	*72	*73.6	72	*73.6	*73.6	*73.6	*73.6	*73.6	*73.6	*73.6	
Conn. T	102	12½	45	45	NP	½	NS	NS-P 800-S	22.4	32	50	50	50	50	NP	NP	NP	NP	NP	NP	NP	NP	
Del. X	96	12½	35	50	60	1½	48	700	20	26	40c	48c	60c	60c	60c	60c	60c	60c	60c	60c	60c	60c	
D. C. XVZ	96	12½	35	50	50	1 or ½	40	NS	22	44	60	65.4	65.4	65.4	65.4	65.4	65.4	65.4	NP	NP	NP	NP	
Fla. X	96	m 12½	40a	50	50	1 or ½	40	550	18c	36	54	54	64.6	64.6	64.6	64.6	64.6	64.6	NP	NP	NP	NP	
Ga. X	96	13½	35	45	45	1 or ½	48	NR	18-I 16-J	36	*46.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	
Idaho	96	14	35	60	65	1½	NS	800 ^c	18	36	50	54	68	72	72	72	72	72	72	72	72	72	
Illinois	96	13½	42	45	45	1½	40	800	18	36	41	45	59	59	63	63	72	72	72	72	72	72	
Indiana	96	m 12½	36k	50	50	1½	40	800	18	36	50	54	68	72	72	72	72	72	72	72	72	72	
Iowa TX	96	12½	35ak	45	NP	½	40	NR	18	36	50	54	60.8	60.8	NP	NP	NP	NP	NP	NP	NP	NP	
Kansas	96	12½	35ak	50	50	1 or ½	40	NR	18-I 16-J	36	50	54	63.8	63.8	63.8	63.8	63.8	63.8	63.8	NP	NP	NP	NP
Ky. T	96	12½	35	45	NP	½	NS	600	18	36	42	42	42	42	NP	NP	NP	NP	NP	NP	NP	NP	
La.	96	12½	35ak	50	60	1 or ½	40	NR	18-I 16-J	18b	32b	36b	54b	64b	54b	NP	68b	NP	NP	NP	NP	NP	
Maine X	96	12½	45h	45h	45h	1 or ½	48	600	22-G	32	50	50	50	50	50	50	50	50	NP	NP	NP	NP	
Md. X	96	NR	55	55	55	NR	NS	600	22.4	44.8	*58.4	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	*65.2	
Mass. T	96	NR	35	45	NS	1 or ½	NS	800	22.4	36	50	50	50	50	37	37	51	51	NP	NP	NP	NP	
Mich. P	96	13½	35	50	50	1½	42	700	18-P 16-S	36-W	50-W	54-W	68-W	76-W	72-W	86-W	86-W	94-W	104-W	104-W	120-W		
Minn. X	96	12½	40	45	45	1 or ½	40	NR	18-P 10.8-S	36	*46.9	*54	*57.7	*57.7	*57.7	*57.7	*57.7	*57.7	NP	NP	NP	NP	
Miss. X	96	12½	35	45	45	1 or ½	40	Table	18-I 16-J	27	37.6	45	52.6	52.6	52.6	52.6	52.6	52.6	NP	NP	NP	NP	
Mo. X	96	12½	35	45	45	1½	40	600	16-J 18-I	36	*46.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	*53.9	NP	NP	NP	NP	
Mont. X	96	13½	35k	60	60	1 or ½	40	NS	18	36	50	54	68	73.2	72	73.2	73.2	73.2	NP	NP	NP	NP	
Neb. X	96	12½	35	50	50	1½	NS	NR	18	36	50	54	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	64.6	
Nev. X	NR	NR	NR	NR	NR	NR	42	600	18	36	46.4	54	66.8	76.8	76.8	72	76.8	76.8	76.8	76.8	76.8	76.8	
N. H.	96	13½	35	45	45	NR	48	NS	NR	30	40	50	50	50	50	50	50	50	50	50	50	50	
N. J.	96	12½	35	45	50	1 or ½	NS	Table	Table	30	40	60	60	60	60	60	60	60	NP	NP	NP	NP	
N. M. VX	96	12½	40	65	65	1 or ½	40	600	18	36	*54	54	*72	*72.7	72	*72.7	*72.7	*72.7	NP	NP	NP	NP	
N. Y. X	96	13	35	50	50	1 or ½	46	800-P 640-S	22.4	36	44	58.4	*61.5	*61.5	*61.5	*61.5	*61.5	*61.5	NP	NP	NP	NP	
N. C. Z	96	12½	35	48	48	1 or ½	48	600	18-I 16-J	L 30	44	46.2n	58.8n	58.8n	58.8n	58.8n	58.8n	58.8n	NP	NP	NP	NP	
N. D. X	96	12½	35	45	45	1 or ½	40	550	18	36	48	54	*57.7	*57.7	*57.7	*57.7	*57.7	*57.7	NP	NP	NP	NP	
Ohio X	96	m 12½	35	45	60	NR	NS	650	18-P 16-S	38	50.5	57	*67.6	*67.6	76	78	78	78	78	78	78	78	

WEIGHT LIMITS

SELECTION & OPERATION

STATE	SIZE RESTRICTIONS						GROSS WEIGHT		(See Boxed NOTE) PRACTICAL GROSS WEIGHT LIMITS (In thousands of pounds)													
	Width (Inches)	Height (Feet)	LENGTH			Minimum Tandem Axle Spacing	(LEGAL LIMITS)		Below Limits Apply to Pneumatic Tires Unless Otherwise Specified													
			Single Unit	Tractor Semi-Trailer	Other Combinations		Number of Trailers (Semi-Trailer = ½)	Pounds Per Inch of Tire Width	Per Axle (1000 lb.)	4-Wheel Single Unit	6-Wheel Single Unit	4-Wheel Tractor 2-Wheel Semi-Tr.	4-Wheel Tractor 4-Wheel Semi-T.	6-Wheel Tractor 4-Wheel Semi-T.	4-Wheel Truck 4-Wheel Trailer	4-Wheel Truck 6-Wheel Trailer	6-Wheel Truck 4-Wheel Trailer	6-Wheel Truck 6-Wheel Trailer	4-Wheel Tractor 2-Wheel Semi-T. 4-Wheel Trailer	4-Wheel Tractor 4-Wheel Semi-T. 4-Wheel Trailer	6-Wheel Tractor 4-Wheel Semi-T. 6-Wheel Trailer	
Okla. X	96	m 12½	35r	50	50	1½	40	650	18	36	50	54	60	60	60	60	60	60	60	60	60	60
Ore. VX	96	12½	35	55	60	NR	40	600	18	36	54	36b	50b	65.4	54b	72	72	72	72	72	72	72
Pa.	96	m 12½	35k	45	50	1 or ½	36	800	20	H 30	H 40	H 45	H 45	H 45	H 56	H 62	H 62	H 62	NP	NP	NP	NP
R. I.	102	12½	35k	45	45	1 or ½	NS	800	22.4	32	44	50	50	50	64	72	72	80	NP	NP	NP	NP
S. C. X	96	12½	40a	50	50	1 or ½	40	NR	20-I 16-J	40	52	60	68.3	68.3	68.3	68.3	68.3	68.3	NP	NP	NP	NP
S. D. X	96	13	35ak	50	50	1 or ½	40	600	18-I 16-J	38	50	54	64.6	64.6	64.6	64.6	64.6	64.6	NP	NP	NP	NP
Tenn. X	96	12½	35	45	45	1 or ½	NS	NS	18	36	42	42	42	42	42	42	42	42	NP	NP	NP	NP
Tex. X	96	m 12½	35	45	45	1 or ½	40	650-I 600-J	18-I 16-J	36	*46.9	48	48	48	48	48	48	48	NP	NP	NP	NP
Utah X	96	14	45	60	60	2	40	NS	18-P 13.5-S	36	51	54	69	79.9	72	79.9	79.9	79.9	79.9	79.9	79.9	79.9
Vt.	96	12½	50	50	50	1 or ½	40	600	NR	30	40	50	50	50	50	50	50	50	NP	NP	NP	NP
Va. VZ	96	12½	33g	45	45	1 or ½	40	650	18	32	40	50	50	50	50	50	50	50	NP	NP	NP	NP
Wash. X	96	12½	35	60	60	1 or ½	42	500	18	28	36	46	60	68	60	60	68	72	NP	NP	NP	NP
W. Va. W'XZ	96	12½	35	45	45	NR	40	NS	18-PB	36-PWB	54-PWB	54-PWB	72-PWB	90-PWB	72-PWB	90-PWB	90-PWB	*102.4PB	90-PWB	*102.4PB	*102.4PB	
Wisc. VX	96d	12½	35	45	45	1 or ½	40	800	19-C 12-D	38-C	*53-C	57-C	*63-C	*63C	*63C	*63C	*63C	*63C	NP	NP	NP	NP
Wyo. X	96	12½	40	60	60	1 or ½	40	NS	18	36	50	54	68	73.9	72	73.9	73.9	73.9	73.9	73.9	73.9	73.9

*—See explanation in Note at right

a—Vehicles over 35 ft. length must have 3 axles.

b—Plus weight on front axle of motor vehicle.

c—With power brakes.

d—104 inches for urban buses.

e—Buses allowed 35 ft. length.

f—Trailers are limited to 26 ft.

g—Buses permitted 40 ft.

h—Automobile transporters allowed 13½ ft. height; in Okla. 13 ft.

i—Including tolerance.

j—Graduated according to tire width

k—26,000 lbs. on tandem axles 3 ft. 6 in. apart; applies June 1 to February 28; differs with season.

l—500 lbs. when total tires under 30 inches wide.

m—Buses permitted 45 ft.

n—There is a table of axle weights based upon tire widths.

NP—Not permitted.

NR—No restriction.

NS—Not specified.

P—Pneumatic tires.

S—Solid tires.

B—In "Industrial Areas"—varies for different "areas."

C—Permissible on "Class A" highways.

D—Permissible on "Class B" highways.

G—Axles less than 10 ft. apart limited to 16,000 lbs. per axle.

H—Maximum shown. In practice, permissible gross weight depends on chassis weight.

I—Permissible on balloon tires.

J—Permissible on other than balloon tires.

L—Buses permitted 22,500 maximum net weight.

T—With the following exceptions full trailers are permitted the same gross weight as other single units:—

NOTE ON "W" AND ASTERISK

Except when shown by asterisk or when followed by the letter "W," the above gross weight limits are the limits fixed by state law.

When shown by asterisk the above limits are computations made by the National Highway Users Conference to show what it considers to be practical gross weights where gross weights are arrived at by application of one of the formulae shown below under Footnote "X." In making these computations, wheel base was arrived at by deducting 8 ft. total over-hang front and rear from permissible overall length of unit or combination; tandem axles were considered to be a minimum permissible distance apart; H-20 bridge formula was used in West Virginia. When actual over-hang is less than 8 ft. additional gross weight will be possible.

When followed by the letter "W," the limits shown are maximum possible weights where gross weight is determined by permissible axle weight. These limits are possible only when each axle carries a gross weight equal to the permissible axle limit as shown.

Ala., Iowa, Conn., Ky.—Full trailers prohibited.

Mass.—Trailers limited to 1,000 lbs. capacity.

V.—Solid tires prohibited.

W.—See Note above.

WI.—Maximum gross when all axles carry maximum load—See "Note."

X.—States where gross weight is determined by formula or by table of axle spacing. (See State under "Bridge Formulas" in next column and formula computations on next page.)

Z.—See "Restrictions Peculiar to Certain States" on next page.

BRIDGE FORMULAS

Ala.—700 (L plus 40) on any unit or combination.

Ariz.—800 (L plus 40) new vehicles; 850 (L plus 40) vehicles registered before June 9, 1955; 700 (L plus 40) new vehicles with axle spacing 18 feet or less; 750 (L plus 40) vehicles registered before June

9, 1945 until January 1, 1955, axle spacing between 14 and 18 feet.

Ark.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 73,280 lbs. if spacing is 57 ft. or more.

Calif.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 76,800 lbs. if spacing is 56 feet or more.

Colo.—800 (L plus 40).

Del.—Gross weights graduated from 36,000 lbs. if axle spacing is 4 feet to 60,000 lbs. if spacing is 39 feet or more.

D. C.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 65,400 lbs. if spacing is 46 ft. or more.

Fla.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 64,650 lbs. if spacing is 45 feet.

Ga.—700 (L plus 40).

Idaho.—Gross weights graduated from 30,500 lbs. if axle spacing is 3 feet to 72,000 lbs. if spacing is 56 feet or more.

Iowa.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 60,800 lbs. if spacing is 40 feet or more.

Kans.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 63,890 lbs. if spacing is 56 feet or more.

Maine.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 50,000 lbs. if spacing is 27 feet or more.

Mad.—750 (L plus 40) any unit or combination.

Minn.—750 (L plus 40) when axles are 18 feet or more apart; otherwise 650 (L plus 40).

Miss.—Gross weights graduated from 28,650 lbs. if axle spacing is 4 ft. to 52,650 lbs. if spacing is 30 ft. or more.

Mo.—700 (L plus 40) when axles are 18 feet or more apart; otherwise 650 (L plus 40).

Mont.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 73,280 lbs. if spacing is 57 feet or more.

Nebr.—Gross weights graduated

from 32,000 lbs. if axle spacing is 4 feet to 64,650 lbs. if spacing is 45 feet or more.

Nev.—Gross weights graduated from 30,100 lbs. if axle spacing is 3 feet to 76,800 lbs. if spacing is 56 feet or more.

N. M.—750 (L plus 40) two or more consecutive axles and any unit or combination.

N. Y.—750 (L plus 40) three or more consecutive axles and any unit or combination.

N. Dak.—750 (L plus 40) any unit or combination.

Ohio—800 (L plus 47½).

Okla.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 72,000 lbs. if spacing is 39 feet or more.

Ore.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 72,000 lbs. if spacing is 57 feet.

S. C.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 ft. to 68,350 lbs. if axle spacing is 50 ft. or more.

S. D.—Gross weights graduated from 32,000 lbs. if axle spacing is 4 feet to 64,650 lbs. if axle spacing is 45 feet or more.

Tenn.—700 (L plus 40).

Texas—700 (L plus 40).

Utah.—Gross weights graduated from 33,000 lbs. if axle spacing is 4 feet to 79,990 lbs. if spacing is 54 feet or more.

Wash.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 72,000 lbs. if axle spacing is 57 feet or more.

W. Va.—1330-1000-670 (L plus 40) applies to highways dependent on type of bridges thereon.

Wyo.—Gross weight graduated from 32,000 lbs. if axle spacing is 4 feet to 73,950 lbs. if spacing is 57 feet.

STATE SIZE and WEIGHT LIMITS

Continued from Page 131

GROSS WEIGHTS COMPUTED BY FORMULAS

Computation of Gross Weights according to formulas, based on distance (in feet) between first and last axles, for States Identified by State Size & Weight Limits chart by Footnote "X." It should be remembered that the figures in each column represent only a mathematical extension and are governed by Legal Overall Length Limits for single units and combinations of particular states. Also, that formula computations are superseded in some instances by specific limits given in the chart.

"L" (See Note Below)	Minnesota, ⁶ N. Mex., ⁶ Mo.	West Virginia (H-10 Bridges)	Ala., Ariz., ⁹ Georgia, Tenn., Texas, Mo.	Ariz., ¹⁰ Md., Minn., ⁷ N. Mex., ⁷ N. Y., N. Dak.	West Virginia (H-15 Bridges)	West Virginia (H-20 Bridges)	Colorado, Arizona ¹²	Arizona ¹¹	Ohio	Wisconsin
	550 (L + 40)	670 (L + 40)	700 (L + 40)	750 (L + 40)	1000 (L + 40)	1330 (L + 40)	800 (L + 40)	850 (L + 40)	800 (L + 47½)	1000 (L + 26)
10 ft.	32500 lb.	33500 lb.	35000 lb.	37500 lb.	50000 lb.	66500 lb.	..... lb.	..... lb.	46000 lb.	36000 lb.
11	33150	34170	35700	38250	51000	67630	.....	.....	46800	37000
12	33800	34840	36400	39000	52000	68160	.....	.....	47600	38000
13	34450	35510	37100	39750	53000	69490	.....	.....	48400	39000
14	35100	36180	37800	40500	54000	71820	43200	.....	49200	40000
15	35750	36850	38500	41250	55000	73150	44000	.....	50000	41000
16	36400	37520	39200	42000	56000	74480	44800	.....	50800	42000
17	37050	38190	39900	42750	57000	75810	45600	.....	51600	43000
18	37700	38860	40600	43500	58000	77140	46400	.....	52400	44000
19	38350	39530	41300	44250	59000	78470	47200	.....	53200	45000
20	39000	40200	42000	45000	60000	79800	48000	.....	54000	46000
21	39650	40870	42700	45750	61000	81130	48800	.....	54800	47000
22	40300	41540	43400	46500	62000	82460	49600	.....	55600	48000
23	40950	42210	44100	47250	63000	83790	50400	.....	56400	49000
24	41600	42880	44800	48000	64000	85120	51200	.....	57200	50000
25	42250	43550	45500	48750	65000	86450	52000	55250	58000	51000
26	42900	44220	46200	49500	66000	87780	52800	56100	58800	52000
27	43550	44890	46900	50250	67000	89110	53600	56950	59600	53000
28	44200	45560	47600	51000	68000	90440	54400	57800	60400	54000
29	44850	46230	48300	51750	69000	91770	55200	58650	61200	55000
30	45500	46900	49000	52500	70000	93100	56000	59500	62000	56000
31	46150	47570	49700	53250	71000	94430	56800	60350	62800	57000
32	46800	48240	50400	54000	72000	95760	57600	61200	63600	58000
33	47450	48910	51100	54750	73000	97090	58400	62050	64400	59000
34	48100	49580	51800	55500	74000	98420	59200	62900	65200	60000
35	48750	50250	52500	56250	75000	99750	60000	63750	66000	61000
36	49400	50920	53200	57000	76000	101080	60800	64600	66800	62000
37	50050	51590	53900	57750	77000	102410	61600	65450	67600	63000
38	50700	52260	54600	58500	78000	103740	62400	66300	68400	64000
39	51350	52930	55300	59250	79000	105070	63200	67150	69200	65000
40	52000	53600	56000	60000	80000	106400	64000	.....	70000	66000
41	52650	54270	56700	60750	81000	107730	64800	.....	70800	67000
42	53300	54940	57400	61500	82000	109060	65600	.....	71600	68000
43	53950	55610	58100	62250	83000	110390	66400	.....	72400	69000
44	54600	56280	58800	63000	84000	111720	67200	.....	73200	70000
45	55250	56950	59500	63750	85000	113050	68000	.....	74000	71000
46	55900	.....	60200	64500	.....	.....	68800	.....	74800	.....
47	56550	.....	60900	65250	.....	.....	69600	.....	75600	.....
48	57200	.....	61600	66000	.....	.....	70400	.....	76400	.....
49	57850	.....	62300	66750	.....	.....	71200	.....	77200	.....
50	58500	.....	63000	67500	.....	.....	72000	.....	78000	.....
51	59150	.....	63700	68250	.....	.....	72800	.....	.....	.....
52	59800	.....	64400	69000	.....	.....	73600	.....	.....	.....
53	60450	.....	65100	69750	.....	.....	74400	.....	.....	.....
54	61100	.....	65800	70500	.....	.....	75200	.....	.....	.....

"L"—distance in feet between first and last axles of group of axles considered.

⁶—Vehicles with axles spaced 18 feet or less.

⁷—Vehicles with axles over 18 feet apart.

⁹—In Arizona this applies (up to 18 feet) to any two or more axles on any vehicle or combination which was first registered on or after June 9, 1945.

¹⁰—This applies in Arizona to any vehicle or combination which was first registered prior to June 9, 1945, having a group of two or more axles, where the distance between the first and last axles of the group is between 14 and 18 feet, inclusive.

¹¹—This applies to any vehicle or combination first registered prior to June 9, 1945, where the total wheel base is between 25 and 45 feet, inclusive.

¹²—New Vehicles. This formula used in computations shown in chart.

RESTRICTIONS PECULIAR TO CERTAIN STATES

N. C.—Over 40,000 lbs. must have 300 cubic inches piston displacement. Over 50,000 lbs. must have 350 cubic inches.

VA.—Two-axled vehicles with six wheels permitted 32,000 lbs. gross; otherwise 24,000 lbs.

W. VA.—No unit may carry a load more than 100 per cent greater than its registered capacity if registered for not over two tons; or more than 50 per cent greater if registered for over two but not over four tons; or more than 25 per cent greater if registered for over four tons.

DIESEL FUEL SPECIFICATIONS

The increase in the use of diesel-powered vehicles has spurred interest in diesel fuel specifications. CCJ meets the demand for this information with the table below, which represents the latest available data

DIESEL FUEL TRADE NAME	Cetane No.	Viscosity SSU 100 Deg. F.	Water & Sediment Max. %	Carbon Residue Max. %	Ash Max. %	Flash Min. Deg. F.	Sulphur Max. %	A.S.T.M. DISTILLATION				Gravity	Pour Point Max. Deg. F.	AREAS OF DISTRIBUTION
								10%	50%	90%	End Point			
American Oil Co. Amo-Fuel No. 2.....	45-50	35 min.	0.05	0.1	0.01	140	0.50	440 max.	600 max.	650 max.	30-34	0	From Maine to Florida.
Atlantic Refining Co. ¹ Furnace Oil Medium.....	45 avg.	33-40	0.05	0.10 ⁶	0.01	130-160	0.625	440 max.	510 avg.	600 max.	640 max.	32 min.	0	N. Y., Pa., Md., N. C., Ga., Fla.
Special Diesel Fuel.....	48 avg.	33 avg.	0.03	0.05 avg. ⁶	0.01	140 avg.	0.3 avg.	410 avg.	480 avg.	560 avg.	620	37 avg.	0	
Diesel Fuel.....	50 min.	34-40	Trace	0.15 ⁶	0.01	150	0.50	470 max.	530 max.	640 max.	690	32 min.	0	
Cities Service Oil Co. Diesel Fuel No. 12.....	55.0	1.8-3.0 ⁸	0.05	0.15	0.01	0.25	550	590	-25	Okla., Kan., Neb., Iowa, Ill., Ind., Mo., Minn., Cal., Tex., Ark., Wyo.
Diesel Fuel No. 23.....	50.0	35-45	.....	0.20	0.01	150	1.00	.....	.....	650 ⁴	700 ⁵	.....	0
Continental Oil Co. Conoco Diesel Fuel.....	50 min.	34-35	Trace	.05-.15 ⁶	Trace	150	.15-.20	435-470	488-520	530-580	610-640	37-38	-5-0	Texas, La. New Mexico, Texas. Okla., Kan., Neb., Iowa, Ill., Ind., Mo., Minn., Cal., Tex., Ark.
Conoco Diesel Fuel.....	50 min.	35	Trace	.05-.10 ⁶	Trace	200-215	.15-.20	488-498	524-528	540-600	620-625	36-39	0-15	
Conoco Diesel Fuel.....	49 min.	34	.05	.05 ⁶	Trace	150	.5	468	517	575	610	36-38	0	
Conoco Diesel Fuel "B".....	48 min.	33	Trace	.05 ⁶	Trace	130	.1	367-394	.....	.....	525	43-45	-15
Eso Standard Oil Co. ⁷ Eso Std. Oil Co. of Pa. ⁷ Eso Diesel Fuel 160.....	52	32	Nil	Nil	Nil	125	0.08	385	448	515	544	42.0	-35	New England, N. Y., S. C., N. C., Va., W. Va., Tenn., La., Ark., Md., Del., D. C., N. J., Pa.
Eso Diesel Fuel 208.....	54.0	35.3	Nil	0.02	Nil	150	0.25	440	508	590	642	37.5	0	
Eso Diesel Fuel 210.....	47.5	37.5	Nil	0.03	Nil	150	0.60	460	540	620	660	34.8	10	
Gulf Oil Corp. Gulf No. 1 Diesel Fuel.....	50-60	30-32	Nil	0.05	Nil	125	0.10	395	440	560	42-48	-25	All states east of Mississippi River plus Tex., Ark. and La.
Gulf Diesel Fuel.....	50 min.	34-45	Trace	0.15	0.01	150	0.50	455	.....	600	650	36-42	0
Phillips Petroleum Co. Phillips Diesel Regular.....	50	35-50	Trace	.10 ⁶	0	150	0.50	460 max.	525	600 max.	650 max.	38-40	0	Colo., N. M., Western Texas, Texas Gulf. Ark., Kan., Ill., Iowa, Minn., Mo., Neb., Okla. Kan., Ill., Iowa, Minn., Mo., Neb. Ark., Kan., Ill., Iowa, Minn., Mo., Neb., Okla.
Phillips Diesel Regular.....	50	35-40	Trace	.10 ⁶	0	150	0.30	460 max.	540	630 max.	675 max.	35-40	0-10	
Phillips Diesel Special.....	50	33-40	Trace	.10 ⁶	0	140	0.25	440 max.	520	600 max.	650 max.	39-41	0	
Phillips Diesel Light.....	50	30-32	Trace	.05 ⁶	0	120	0.15	410 max.	460	500	525 max.	42-44	-20	
Pure Oil Co. Energee Diesel Fuel #1.....	50 min.	31 min.	0.01	0.05 ⁶	0.01	125	0.25	410 max.	450 max.	510 max.	580 max.	41 min.	0	East of Mississippi River (excluding New England and N. Y.), Minn., Iowa, Ark., Texas and the Dakotas.
Energee Diesel Fuel #2.....	50 min.	34 min.	0.01	0.20 ⁶	0.01	150	0.25	440 max.	500 max.	600 max.	660 max.	34 min.	0	
Richfield Oil Corp. Richfield Diesel Fuel.....	42	38	Trace	0.08	Nil	170	0.60	4.71	540	615	660	32.0	0	Cal., Ore., Wash., Nev., Ariz., Idaho. Cal., Nev., Ariz.
Richfield Rocket.....	48	36	Nil	0.05	Nil	200	0.20	480	520	570	605	34.8	0	
Shell Oil Co. (N. Y.) Dieseline.....	45	33-40	0.05	0.30	0.01	150	1.0	480	650	700 max.	0	Ark., Iowa, La., Minn., Mo., Texas, East of Mississippi.
Premium Dieseline.....	45	1.4-2.2 ⁸	Nil	0.15	0.01	120	0.15	410	.....	.....	560 max.	40 min.	0
Shell Oil Co. (San. Fran.) Dieseline.....	40	35-45	0.05	0.25 ⁶	0.01	150	1.0	425-485	550 max.	600-675	725 max.	29 min.	15	Cal., Ore., Wash., Nev., Ariz., Idaho.
Premium Dieseline.....	50	30-36	.....	0.15 ⁶	0.01	125	0.50	.....	.....	550 max.	590 max.	.....	0
Sinclair Refining Co. 155 Diesel Fuel.....	49	None	0.05	140	0.44	422	602	664	35.2	0	All states listed below. N. Y., N. J., Del., Pa., Md., D. C., Va., W. Va., Ala., Fla., Ga., Miss., N. C., S. C., Tenn., Tex. Ind., Ill., Mich., Ohio, Wisc. Utah, Colo., Wyo., Iowa, Kan., Minn., Mo., Neb., N. D., S. D. Ind., Ill., Mich., Ohio, Wisc., Utah, Colo., Wyo., Idaho, Iowa, Kan., Minn., Miss. Neb., N. D., S. D., Okla.
250 Diesel Fuel.....	52.6	35	None	0.35	.....	168	0.16	428	501	596	660	39.0	0
346 Diesel Fuel.....	52.6	35	None	0.35	.....	168	0.16	428	501	596	660	39.0	0
347 Diesel Fuel.....	52.6	35	None	0.35	.....	168	0.16	428	501	596	660	39.0	0
355 Diesel Fuel.....	53.4	35	None	0.20	0.01	172	0.19	431	504	596	656	38.8	0	
Socony-Vacuum Oil Co. Mobilfuel Diesel.....	45-50	31 min.	Trace	0.01	150	0.5	440	600	675	0	Wherever demand exists.
Mobilfuel Diesel Special.....	45-50	31 min.	Trace	.....	Trace	125	0.5	410	.....	500	560	.....	-20
Standard Oil Co. of Cal. ⁷ Standard Diesel.....	42.5-50	35.4-38.2	0.0	0.0-0.07 ⁶	0.0	160-192	0.21-0.73	431-482	506-546	566-625	624-718	31.5-34.9	0-10	Cal., Ore., Wash., Idaho, Nev., Ariz., Utah, Hawaii, Alaska.
Std. Automotive Diesel.....	50-50.5	1.8-1.9 ⁸	0.0	0.01 ⁶	0.0	148-152	0.03-0.11	392-398	442-450	516-523	580-589	39.3-42.9	-30-40	
Standard Oil Co. of Ind. ⁷ Stanolind.....	55	35	Trace	0.05	Trace	160	0.29	480	530	586	624	38	0	Mich., Ind., Ill., Minn., Iowa, Mo., Neb., N. D., S. D., Kan., Mont., N. Y., Colo., Wia.
Stanolox.....	45	33	Trace	0.10	Trace	150	0.45	400	475	565	625	37.1	-10	
Standard.....	50	32	Trace	0.02	Trace	150	0.27	395	440	500	560	41.5	-20	
Sun Oil Co. Diesel Fuel Light.....	50	34-36	None	0.15	Nil	125	0.20	440	520	620	650	36-40	+5	Phila., Newark, Harrisburg, Pittsburgh, Boston, Wilmington, Baltimore.
The Texas Co. Diesel Chief-L ⁹	40 min.	1.4 min ⁸	Trace	0.15	0.01	100	0.50	625 max.	20	Wherever demand exists.
Diesel Chief ¹⁰	40	45 max.	0.10	0.35	0.02	100	1.0	.....	.....	675 max.	.....	.....	20
Union Oil Co. of Cal. Diesel.....	42	38-40	Trace	0.05	Trace	150	1.0	475	540	640	700	33	20	Ariz., Idaho, Nev., Cal., Ore., Wash.

¹—Figures marked (avg) average, are not guaranteed.

²—Meets GM specs for Series 71 engine fuels, available only on request.

³—Meets Navy Bureau of Ships spec.—"Oil, fuel diesel, 7-0-2e".

⁴—Will be 675 F in Mid-Continent States.

⁵—Does not apply to fuel in Mid-Continent States.

⁶—Based upon "10 per cent bottoms" test.

⁷—These data are typical inspections and are not guaranteed.

⁸—Viscosity given in centistokes.

⁹—Complies with ASTM 1-D spec.

¹⁰—Complies with ASTM 2-D spec.

Specifications for THIRD AXLES and TRAILER SUSPENSIONS

NOTES ON HEADINGS

Column 2. The capacity of the third axle is not to be confused with the total capacity made possible on the converted vehicle.

Column 3. The price of the unit includes the standard brakes specified in brake column and frame extensions that extend forward under the cab. Tires and brake (air or vacuum) power are not included in price nor is the cost of installation.

Column 4. Weight of third axle unit includes all appurtenances and maximum tires.

Column 15 gives brake lining area of attachment unit only.

COLUMN 13—CA—Cast Alloy Iron

††—On application.

—Equipped with gravity spring suspension.

(w)—New pusher-type axle recently introduced by Detroit Automotive Products Corp.

(x)—Patented 4-wheel chain drive available for all Trucktor units.

(y)—All Truxmore units equipped with radius rods on driving axle and load distribution may be adjusted within limits shown in cols. 6 & 7.

(z)—Depends upon installation.

Note 1. Two-axle self-steering undercarriage uses any standard trailer axle.

*—Chains and sprockets available—optional at extra charge.

(a)—Long slip-spline joint supplied for drive axle in place of radius rods.

(c) (d)—

Own—square

Timken—round

Shuler—round

Fruehauf—I-Beam

Std. Forge—round

(e)—Depends upon manufacturer.

(f)—Optional equipment.

(g)—Round, square or I-sectional axles can be used.

ABBREVIATIONS

COLUMN 9

Chev—Chevrolet

Shu—Shuler

Tim—Timken

Wag—Wagner Hi-Tork

COLUMN 10

D—Driving

Re—Rectangular

SF—Solid Forge

Sr—Solid round

Sq—Square

T—Tubular

COLUMN 12

A—Air

B—Bendix

C—Chevrolet

F—Ford

H—Hydraulic

L—Lockheed

M—Mechanical

O—Own

V—Vacuum Power

W—Westinghouse

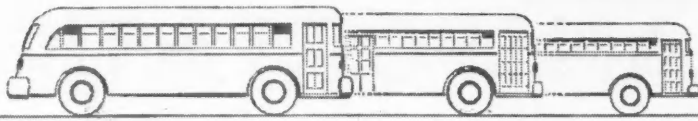
THIRD AXLE MAKE AND MODEL and Truck Model Adapted to	Capacity (Lb.) See Explanatory Notes	Price (f. o. b. factory)	Weight (Lb.) with Max. Tires, Frame Extension, Etc.	Maximum Tire Size	LOAD DIS- TRIBUTION RANGE		Axle Spacing (in inches) (with maximum tires)	AXLE DATA			BRAKES (Standard)				Number of Points of Frame Support	Spring Size or Number Leaves Added	Spindle Diameter (at inner bearing)
					(First Figure or combination applies to center axle; second figure to third axle)			Make	Type	Size	Make and Type	Drum Material	Brake Diameter and Width	Lining Area			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
FABCO																	
220 (Ford)	11000	775	2000	8.25/20	52-48		44	Tim	T	4 1/2	LH	CA	15x3 1/2	192	2	48x2 1/2	2 1/2
2 0 (Chevrolet)	11000	775	2000	8.25/20	52-48		44	Tim	T	4 1/2	LH	CA	15x3 1/2	192	2	48x2 1/2	2 1/2
220 (All other makes)	11000	775	2000	8.25/20	52-48		44	Tim	T	4 1/2	LH	CA	16x3 1/2	205	2	48x2 1/2	2 1/2
330 (All other makes)	13000	975	3000	10.00/20	52-48		44	Tim	T	4 1/2	LH	CA	16x3 1/2	205	2	48x3	2 1/2
325 (Ford F-7)	13000	1173	3000	9.00/20	52-48		44	Tim	SF	4 1/2	M	CA	16 1/2x5	325	2	48x3	3
330 (Ford F-8)	13000	1173	3000	10.00/20	52-48		48	Tim	SF	4 1/2	M	CA	16 1/2x5	325	2	48x3	3
400 (All other makes)	18000	1585	3200	11.00/20	55-45		52	Tim	T	5	M	CA	16 1/2x7	435	2	58x4	3 1/4
FRAZIER																	
10E Tandem	9000	††	1000	9.00/20	54-46		42	Tim	T	4 1/2	Tim	CA	16 1/2x4	290	6	None	2 1/2
12E Tandem	18000	††	1450	10.00/20	54-46		44	Tim	T	4 1/2	Tim	CA	16 1/2x5	362	6	None	2 1/2
14E Tandem	18000	††	2600	11.00/22	54-46		48	Tim	T	5	Tim	CA	16 1/2x6	434	6	None	3 1/4
GRICO SUPER-FLEX																	
T-1300	10 ton	††	2360	9.00	50-50		48	Shu	T	4 1/2	H	CA	16x5	340	2	4, 13	2
T-1400	12 ton	††	2640	10.00	50-50		48	Shu	T	4 1/2	H	CA	16x6	410	2	2, 13	2
T-1410	12 ton	††	2640	10.00	50-50		48	Shu	T	4 1/2	A	CA	16 1/2x6	434	2		2
T-1420	12 ton	††	2640	10.00	50-50		48	Shu	T	4 1/2	A	CA	16 1/2x7	444	2	2, 18	2
T-1600	15 ton	††	2815	11.00	50-50		48	Shu	T	5	A-V	CA	16 1/2x7	444	2	4, 13	2
T-1610	15 ton	††	2815	11.00	50-50		48	Shu	T	5	A-V	CA	16 1/2x8	512	2	4, 18	2
LITTLE GIANT																	
A	11000		1920	8.25/20	53-47	4*	42	Own(g)	Sq	2 3/4	Wag	CA	15x4	253.5	2	42x2 1/2	2 1/2
B	13000		2450	9.00/20	50-50	49(f)	49*	Own(g)	Sq	3	Wag	CA	16x4	270.7	2	49x2 1/2(f)	2 1/2
C	15000		2850	10.00/20	50-50	49(f)	49*	Own(g)	Sq	3 1/4	Wag	CA	16x5	338	2	49x3(f)	3 1/2
D	18000		3050	11.00/20	50-50	49(f)	49*	Own(g)	Sq	3 1/2	Wag	CA	16x6	406	2	49x3 1/2(f)	3 1/4
LOAD BOOSTER "Duaload"																	
LB28C Chev. 1 1/2 & 2 ton	14000		2100	9.00/20	50-50		48	Own	T	4 1/2	VH	CA	16x4	372	4	48x2 1/2	2 1/2
LB28F Ford F5 & F6	14000		2100	9.00/20	50-50		48	Own	T	4 1/2	VH	CA	16x4	372	4	48x2 1/2	2 1/2
LB38F Ford F7 & F8	16000		2600	10.00/20	50-50		48	Own	T	5	VH	CA	16x4	372	4	48x2 1/2	3 1/4
LB28D Dodge 1 1/2 & 2 Ton	14000		2100	9.00/20	50-50		48	Own	T	4 1/2	VH	CA	16x4	372	4	48x2 1/2	2 1/2
LB38D Dodge 2 1/2 & 3 ton	16000		2600	10.00/20	50-50		48	Own	T	5	VH	CA	16x4	372	4	48x2 1/2	3 1/4
LB28V Various 1 1/2 & 2 ton	14000		2100	9.00/20	50-50		48	Own	T	4 1/2	VH	CA	16x4	372	4	48x2 1/2	2 1/2
LB38V Various 2 1/2 & 3 ton	16000		2600	10.00/20	50-50		48	Own	T	5	VH	CA	16x4	372	4	48x2 1/2	3 1/4
SIX WHEELS, INC. "MAXI" (*)																	
GF-1 (All Makes)	13000	(z)	1700	7.50/20	55-45		45	Var	T	4 1/2	Var	Var	Var	Var	2	45x3 1/2	Var
GF-2 (All Makes)	13000	(z)	1750	8.25/20	55-45		45	Var	T	4 1/2	Var	Var	Var	Var	2	45x3 1/2	Var
GF-3 (All Makes)	13000	(z)	1800	9.00/20	55-45		45	Var	T	4 1/2	Var	Var	Var	Var	2	45x3 1/2	Var
GFS-1 (All Makes)	15000	(z)	1850	9.00/20	55-45		45	Var	T	4 1/2	Var	Var	Var	Var	2	45x3 1/2	Var
GFS-2 (All Makes)	15000	(z)	1850	9.00/20	55-45		45	Var	T	4 1/2	Var	Var	Var	Var	2	45x3 1/2	Var
GFS-3 (All Makes)	15000	(z)	1850	10.00/20	55-45		45	Var	T	4 1/2	Var	Var	Var	Var	2	45x3 1/2	Var
GH-1 (All Makes)	16000	(z)	2000	10.00/20	55-45		45	Var	T	5	Var	Var	Var	Var	2	45x3 1/2	Var
GH-2 (All Makes)	16000	(z)	2000	10.00/22	55-45	52-48	45	Var	T	5	Var	Var	Var	Var	2	45x3 1/2	Var
GH-3 (All Makes)	16000	(z)	2000	11.00/20	55-45	52-48	45	Var	T	5	Var	Var	Var	Var	2	45x3 1/2	Var
GHS-1 (All Makes)	18000	(z)	2250	10.00/22	52-48		48	Var	T	5	Var	Var	Var	Var	2	48x3 1/2	Var
GHS-2 (All Makes)	18000	(z)	2250	11.00/20	52-48		48	Var	T	5	Var	Var	Var	Var	2	48x3 1/2	Var
GHS-3 (All Makes)	18000	(z)	2250	11.00/22	52-48		48	Var	T	5	Var	Var	Var	Var	2	48x3 1/2	Var
GHS-4 (All Makes)	18000	(z)	2250	11.00/24	52-48		48	Var	T	5	Var	Var	Var	Var	2	48x3 1/2	Var
TRAILMOBILE																	
CTA-22 (All trucks to 2-ton)	11000	††	1626	8.25/20	58-42		46	Tim	T	4 1/2	Tim	CA	16 1/2x4	290	4	None	2 1/2
CTA-32 (All trucks 2 to 4 1/2 ton)	13000	††	2073	11.00/22	58-42		48	Tim	T	4 1/2	Tim	CA	16 1/2x5	362	4	None	2 1/2
CTA-42 (All heavy-duty trucks)	18000	††	2263	11.00/22	58-42		48	Tim	T	5	Tim	CA	16 1/2x6	434	4	None	3 1/4
TRUCK EQUIPMENT CO. (E)																	
825-C Chev. 1 1/2-2 ton	12000	††	2400	8.25/20	53-47	62-38	44	Own	Sq	2 3/4	H	CA	15x3 1/2	200	4	(a)	2 1/2
825-F Ford 1 1/2-2 ton	12000	††	2400	8.25/20	53-47	62-38	44	Own	Sq	2 3/4	H	CA	15x3 1/2	200	4	(a)	2 1/2
825-X any 1 1/2-2 ton	12000	††	2400	8.25/20	53-47	62-38	44	Own	Sq	2 3/4	H	CA	15x3 1/2	200	4	(a)	2 1/2
825-CL Chev. 1 1/2-2 ton	12000	††	2400	8.25/20	53-47	62-38	48 1/4	Own	Sq	2 3/4	H	CA	15x3 1/2	200	4	(a)	2 1/2
825-FL Ford 1 1/2-2 ton	12000	††	2400	8.25/20	53-47	62-38	48 1/4	Own	Sq	2 3/4	H	CA	15x3 1/2	200	4	(a)	2 1/2
825-XL Ford 1 1/2-2 ton	12000	††	2400	8.25/20	53-47	62-38	48 1/4	Own	Sq	2 3/4	H	CA	15x3 1/2	200	4	(a)	2 1/2
TRUCKTOR (x)																	
HLL (Ford 1 1/2-ton)	8800	950	1750	7.50/20	53-47		45	Own	Sr	3	LHV	CA	15x3 1/2	196	6	38 1/2x2 1/2	2 1/2
HLL (Chevrolet 1 1/2-ton)	8800	950	1750	7.50/20	53-47		45	Own	Sr	3	LHV	CA	16x3	219	6	38 1/2x2 1/2	2 1/2
HLL (Light trucks, tires to 8.25x20)	11000	950	1895	8.25/20	53-47		45	Own	Sr	3	LHV	CA	16x2 1/2	132	6	38 1/2x2 1/2	2 1/2
HLS (Medium trucks, tires to 9.00x20)	14000	1350	2265	9.00/20	53-47		46	Own	Sr	3 1/4	LHV	CA	16x3 1/2	265	6	38 1/2x3	2 1/2
HLS (Ford F-7) tires to 9.00x20	14000	1350	2265	9.00/20	53-47		46	Own	Sr	3 1/4	LHV	CA	16 1/2x3 1/2	219	6	38 1/2x3	2 1/2

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BUS SPECIFICATIONS

Line Number	BUS MAKE AND MODEL	GENERAL							ENGINE										Oiling System		
		Passenger Rating	Type (City Service, Parlor, etc.)	Standard Wheelbase (In.)	Overall Length (In.)—Bumper to Bumper	Inside Length (In.)—Passenger Compartment	Tread (In.)—Front and Rear	Complete Vehicle Weight—Dry (Lb.)	Standard Tire Size (In.)—Front and Rear	Make and Model	Cycle and Fuel	Location	Number of Cylinders—Bore and Stroke (In.)	Displacement (Cu. In.)	Rated Horsepower (A.M.A.)	Maximum Brake Hp. at Governed R.P.M.	Maximum Net Torque (Lb. Ft.) at Specified R.P.M.	Compression Ratio—1 to 1	Compression Pressure—(Lb. Ft.) at Specified R.P.M.		
1	ACF-Brill	IC-41	37-41	IC	270	419 1/2	408	80 1/2-71	20600	11.00/22	HS. 190-2	4-G	UF	6-5 1/2 x 6	779	66.2	220-2200	625-1300	5.60	1	acdfg
2		C-27	27	CS	183	311	296	82 1/2-74	10600	8.25/20	Int. RED 361	4-G	TR	6-4 1/2 x 4 1/2	361	40.8	126-2800	282-1200	6.30	1	acdfg
3		C-31	31	CS	198	344	329	81 1/2-74	11300	9.00/20	Int. RED 401	4-G	TR	6-4 1/2 x 5	401	40.8	160-2800	315-1200	6.30	1	acdfg
4		C-36	36	CS	198 1/2	369 1/2	356	79 1/2-71	14800	10.00/20	HS. 477-2	4-G	UF	6-4 1/2 x 5	477	48.6	160-2400	370-1600	6.00	1	acdfg
5		C-44	44	CS	249	420	407	80 1/2-71	17500	11.00/20	HS. 180-1	4-G	UF	6-5 1/2 x 6	707	60.0	208-2200	540-1200	6.00	1	acdfg
6		C-44	45	Sub	249	420	407	80 1/2-71	18900	11.00/20	HS. 190-2	4-G	UF	6-5 1/2 x 6	779	66.2	220-2200	625-1300	5.60	1	acdfg
7		C-48	48	CS	247	474	462	88 1/2-74 1/2	19200	12.00/20	HS. 190-2	4-G	UF	6-5 1/2 x 6	779	66.2	220-2200	625-1300	5.60	1	acdfg
8	Aerocoach	P-372	37	IC	229	407 1/2	389	80 1/2-72 1/2	17000	10.00/20	Cont. U6501	4-G	TR	6-4 1/2 x 5 1/2	501	48.6	170-2400	380-1200	5.90	1	acdfg
9		P-411	41	IC	261	420	405 1/2	79 1/2-71	20000	11.00/20	Cont. 56749	4-G	TR	6-5 1/2 x 5 1/2	749	69.3	240-2500	575-1400	5.73	1	acdfg
10		T-361	36	CS	210 1/2	367	352	80 1/2-71 1/2	16000	10.00/20	Cont. U6501	4-G	TR	6-4 1/2 x 5 1/2	501	48.6	170-2500	385-1500	5.90	1	acdfg
11		T-451	45	CS	263 1/2	420	405	80 1/2-71	17000	11.00/20	Cont. R6572	4-G	TR	6-4 1/2 x 5 1/2	572	54.0	205-2500	485-1400	6.75	1	acdfg
12	Beaver	27PT	29	CS	154	321 1/2	158	80 1/2-69 1/2	11500	8.25/20	Int. BLD269	4-G	R	6-3 1/2 x 4 1/2	269	35.0	101-3000	220-1000	6.30	114-180	abc
13		B-31PT	33	CS	164	331	169	80 1/2-69 1/2	12800	9.00/20	Int. RD361	4-G	R	6-4 1/2 x 4 1/2	361	44.0	126-2800	282-1200	6.30	110-160	acdfg
14		B-35PT	37	CS	195 1/2	354	192	80 1/2-69 1/2	13500	9.00/20	Int. RD450	4-G	R	6-4 1/2 x 5	451	52.0	148-2600	362-1000	6.30	122-180	acdfg
15	Beck	Steelliner	24	IC	190	322	262	76-68		8.25/20	Int. BLD269	4-G	Fr	6-3 1/2 x 4 1/2	269	30.4	100-3000	220-1000	6.13		acdfg
16		Mainliner	33	IC	220	396	323	81 1/2-69 1/2		10.00/20	Int. RED450	4-G	R	6-4 1/2 x 5	450	45.9	140-2400	350-1000	6.30		acdfg
17		Mainliner Series II	37	IC	220	420	350	80 1/2-71 1/2		11.00/20	I-C. R6586	4-G	R	6-4 1/2 x 5 1/2	586	55.6	200-2600	475-1000	6.00	120-150	abed
18		Luxury Liner	37	IC	220	420	356	80 1/2-71 1/2		11.00/20	Cum.HRB600	4-D	R	6-5 1/2 x 6	743	63.1	165-1800	540-1000	15.50		abed
19	Cub	16-S	16	IC	160	271	197	61 1/2-60 1/2	5960	7.50/17	Ford... 9H-J	4-G	Fr	6-3 3/4 x 4	226	26.4	95-3300	180-1200	6.80	110-60	L acd
20		19-T	19	CS	180	271	197	61 1/2-60 1/2	5960	7.50/17	Ford... 9H-J	4-G	Fr	6-3 3/4 x 4	226	26.4	95-3300	180-1200	6.80	110-60	L acd
21	Fitzjohn	Cityliner	33-35	CS	165 1/2	334	320	82 1/2-69 1/2	12000	10.00/20	Her... JXLD	4-G	Fr	6-4 x 4 1/2	339	38.4	131-3000	272-1400	7.00		L abedg
22		19-T	19	CS	180	271	197	61 1/2-60 1/2	5960	7.50/17	Her... JXLD	4-G	Fr	6-4 x 4 1/2	339	38.4	131-3000	272-1400	7.00		L abedg
23	Flexible	37C1-50	37	IC	231	418	356	80 1/2-71 1/2	17250	10.00/20	Chef.LM-235	4-G	R	6-3 1/2 x 3 1/2	470	60.8	186-3400	384-11	6.62		L adf
24		25B1-50	25	IC	182	359	252	80 1/2-69 1/2	12800	9.00/20	Bui... FB320	4-G	R	8-3 1/2 x 4	320	37.8	144-3400	278-2200	6.70		L acdf
25		25C1-50	25	IC	182	359	252	76-69 1/2	11330	8.25/20	Chef.LM-235	4-G	R	6-3 1/2 x 3 1/2	470	60.8	186-3400	384-11	6.62		L adf
26		23B3-50	23	IC	218	395	288	80 1/2-69 1/2	13450	9.00/20	Bui... FB320	4-G	R	8-3 1/2 x 4	320	37.8	144-3400	278-2200	6.70		L acdf
27		29B1-50	29	IC	218	395	288	80 1/2-69 1/2	13390	9.00/20	Bui... FB320	4-G	R	8-3 1/2 x 4	320	37.8	144-3400	278-2200	6.70		L acdf
28		23B2-50	23	IC	218	395	288	80 1/2-69 1/2	13450	9.00/20	Bui... FB320	4-G	R	8-3 1/2 x 4	320	37.8	144-3400	278-2200	6.70		L acdf
29		21C1-50	21	IC	146	323	216	76-69 1/2	10600	8.25/20	Chef.LM-235	4-G	R	6-3 1/2 x 3 1/2	470	60.8	186-3400	384-11	6.62		L adf
30		33B7-50	33	IC	212	395	288	80 1/2-69 1/2	13265	9.00/20	Bui... FB320	4-G	R	8-3 1/2 x 4	320	37.8	144-3400	278-2200	6.70		L acdf
31	21B1 & 29B6-50	21	IC	146	323	252	80 1/2-69 1/2	11140	8.25/20	Bui... FB320	4-G	R	8-3 1/2 x 4	320	37.8	144-3400	278-2200	6.70		L acdf	
32	29HD1-50	29	IC	218	395	288	80 1/2-69 1/2	15100	9.00/20	Her DWXLD	4-D	R	6-4 1/2 x 5	426	43.3	142-2600	330-1700	15.50		abed	
33	GMC	PDA3703	37	IC	239	420	366	80 1/2-72	16820	10.00/20	Own... 6-71	2-D	R	4-4 1/2 x 5	284	28.9	177-2800	410-1200	6.5	500-1000	acdfg
34		PDA4101	41	IC	247	420	387	79 1/2-70	18056	11.00/20	Own... 6-71	2-D	R	4-4 1/2 x 5	284	28.9	177-2800	410-1200	6.5	500-1000	acdfg
35		TGH2708	27	CS	151 1/2	296 1/2	258	81 1/2-75	9060	8.25/20	Own... 270	4-G	TR	6-3 1/2 x 4	270	34.3	107-3200	207-1000	6.75	165-1000	acdfg
36		TGH-3101	31	CS	180 1/2	325 1/2	287	81 1/2-75	9430	8.25/20	Own... 270	4-G	TR	6-3 1/2 x 4	270	34.3	107-3200	207-1000	6.75	165-1000	acdfg
37		TDM3209	32	CS	182 1/2	341 1/2	308	80 1/2-72	13885	9.00/20	Own... 503	4-G	TR	4-4 1/2 x 5	503	49.9	177-2800	410-1200	6.5	150-1000	acdfg
38		TDM3209	32	CS	182 1/2	341 1/2	308	80 1/2-72	13264	9.00/20	Own... 503	4-G	TR	4-4 1/2 x 5	503	49.9	177-2800	410-1200	6.5	150-1000	acdfg
39		TDM3612	36	CS	210 1/2	369 1/2	337	80 1/2-72	14360	9.00/20	Own... 503	4-G	TR	4-4 1/2 x 5	503	49.9	177-2800	410-1200	6.5	150-1000	acdfg
40		TDM3612	36	CS	210 1/2	369 1/2	337	80 1/2-72	13742	9.00/20	Own... 503	4-G	TR	4-4 1/2 x 5	503	49.9	177-2800	410-1200	6.5	150-1000	acdfg
41		TDM4010	40	CS	238 1/2	396	366	79 1/2-72	15760	10.00/20	Own... 6-71	2-D	R	4-4 1/2 x 5	426	43.3	170-2000	545-1000	17.1	500-1000	acdfg
42		TDM4509	45	CS	238 1/2	420	390	79 1/2-72	16206	10.00/20	Own... 6-71	2-D	R	4-4 1/2 x 5	426	43.3	170-2000	545-1000	17.1	500-1000	acdfg
43		TGH3209	32	CS	182 1/2	341 1/2	308	80 1/2-72	13790	9.00/20	Own... 503	4-G	TR	4-4 1/2 x 5	503	49.9	177-2800	410-1200	6.5	150-1000	acdfg
44		TGH3209	32	CS	182 1/2	341 1/2	308	80 1/2-72	13495	9.00/20	Own... 503	4-G	TR	4-4 1/2 x 5	503	49.9	177-2800	410-1200	6.5	150-1000	acdfg
45		TGH3612	36	CS	210 1/2	369 1/2	337	80 1/2-72	14275	9.00/20	Own... 503	4-G	TR	4-4 1/2 x 5	503	49.9	177-2800	410-1200	6.5	150-1000	acdfg
46		TGH3612	36	CS	210 1/2	369 1/2	337	80 1/2-72	13980	9.00/20	Own... 503	4-G	TR	4-4 1/2 x 5	503	49.9	177-2800	410-1200	6.5	150-1000	acdfg
47		TDM4010	40	CS	238 1/2	396	366	79 1/2-72	15645	10.00/20	Own... 6-71	2-D	R	4-4 1/2 x 5	426	43.3	170-2000	545-1000	17.1	500-1000	acdfg
48		TDM4509	45	CS	238 1/2	420	390	79 1/2-72	16066	10.00/20	Own... 6-71	2-D	R	4-4 1/2 x 5	426	43.3	170-2000	545-1000	17.1	500-1000	acdfg
49	Kalamazoo		29	IC	194	316		70-66		8.25/20	Int... K-7	4-G	Fr	6-3 1/2 x 4 1/2	269	30.4	101-3000	222-1600	6.30		abed
50			21-27	CIC	160	281		70-66		7.50/20	Int... K-7	4-G	Fr	6-3 1/2 x 4 1/2	269	30.4	101-3000	222-1600	6.30		abed
51	Mack	C33	33	CS	180	344	313	79 1/2-71 1/2	15980	10.00/20	Own EN510A	4-G	TR	6-4 1/2 x 5 1/2	510	47.3	158-2400	400-1000	6.07	135-1000	acdeh
52		C37	37	CS	213 1/2	377 1/2	346 1/2	79 1/2-71 1/2	16530	10.00/20	Own EN510A	4-G	TR	6-4 1/2 x 5 1/2	510	47.3	158-2400	400-1000	6.07	135-1000	acdeh
53		C41	41	CS	237 1/2	396	366 1/2	80 1/2-71	18220	11.00/22	Own EN672	4-G	TR	6-4 1/2 x 6	672	57.0	187-2000	535-1150	6.15	146-1000	acdeh
54		C41 Diesel	41	CS	237 1/2	396	366 1/2	80 1/2-71	18570	11.00/22	Own EN672	4-G	TR	6-4 1/2 x 6	672	57.0	187-2000	535-1150	6.15	146-1000	acdeh
55		C45	45	CS	261 1/2	420	390 1/2	80 1/2-71	18820	11.00/22	Own EN672	4-G	TR	6-4 1/2 x 6	672	57.0	187-2000	535-1150	6.15	146-1000	acdeh
56		C45 Diesel	45	CS	261 1/2	420	390 1/2	80 1/2-71	19170	11.00/22	Own EN672	4-G	TR	6-4 1/2 x 6	672	57.0	187-2000	535-1150	6.15	146-1000	acdeh

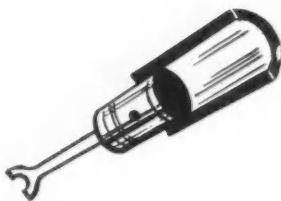
SELECTION & OPERATION



FUEL SYSTEM		ELECTRICAL SYSTEM		Governor	TRANSMISSION		Uni- versals	REAR AXLE		BRAKES		SPRINGS		RUNNING GEAR		Line Number															
Make and Type	Size (In.)	Tank Capacity (Gal.)	Ignition System—Make		Clutch—Make and Size (In. diam.)	Make		Make and Model	Service	Hand	Front	Rear	Front Axle—Make	Steering Gear—Make																	
Carburetor or Injector Pump			Generator and Starter—Make	Type	No. of Forward Speeds	Low Speed Ratio—To 1	Type	Standard Gear Ratio—To 1	Type of Applicator	Total Lining Area (Sq. In.)	Drum Diam. (In.)	Operates on—	Total Lining Area (Sq. In.)	No. of Leaves	Length and Width (In.)	No. of Leaves	Length and Width (In.)	Front Axle—Make	Steering Gear—Make	Outside Diameter of Min. Turn Circle (Ft.)											
Zen. Up 2	120	DR	DR	12-1584	Ce	68	Lg	17	Spi	4	4.38	M	2	1700	Tim	59071W	4.11	A	899	16 1/2	Da	127	†	59-4	†	76-4	Tim	Ro	92	1	
Hol. Up 1 1/4	65	DR	LD	12-158	Va	48	BB	14	Cla	3	4.08	M	2	1500	Tim	56434W	6.17	A	533	14 1/2	Da	85	11	60-3	12	64-3	Cla	Ro	61	2	
Hol. Up 1 1/4	65	DR	LD	12-158	Va	50	BB	14	Cla	3	4.08	M	2	1500	Tim	56434W	6.17	A	533	14 1/2	Da	85	12	60-3	12	64-3	Cla	Ro	67	3	
Zen. Up 2	88	DR	LD	12-158		45																									
Zen. Up 2	107	DR	LD	12-158		62																									
Zen. Up 2	107	DR	LD	12-158		62																									
Zen. Up 2	120	DR	DR	12-1584	Ce	64	Lg	17	Spi	4	4.38	M	2	1700	Tim	59070W	5.14	A	830	16 1/2	Da	127	†	66-4	†	76-4	Tim	Ro	85	5	
Zen. Up 2	120	DR	DR	12-1584		52																									
Zen. Up 2	100	DR	DR	12-180	Su	65	Lg	14	Cla	5	5.22	M	2	1600	Tim	58433A	5.55	A	848	15	Da	127	12	62-4	14	68-5	Tim	Ro	71	7	
Zen. Up 2	150	DR	LD	12-180	Su	73	Lg	17	Spi	4	3.94	M	2	1700	Tim	R100	4.11	A	850	15	Da	65	†	Special	†	Special	Tim	Ro	83	8	
Zen. Up 2	100	DR	LD	12-180	Su	48	Spi	14	Cla	5	6.80	H	2	1600	Tim	L110B	6.16	A	638	15	Da	60	†	Special	†	Special	Tim	Ro	66	10	
Zen. Up 2	100	DR	LD	12-180	Su	49	Spi	16	Spi	†	6.60	H	2	1700	Tim	R110	6.16	A	850	15	Da	65	†	Special	†	Special	Tim	Ro	83	11	
Car. Do 1 1/4	65	DR	DR	12-158	Su	61	Roc	14	BL	3	3.96	M	2	1500	Tim	H110P	5.28	A	638	16 1/2	Da	45	14	60-3	16	60-3	Tim	Ro	55	12	
Zen. Up 1 1/4	65	DR	DR	12-158	Su	67	Roc	14	BL	3	3.96	M	2	1500	Tim	L110	5.28	A	638	16 1/2	Da	45	14	60-3	16	60-3	Tim	Ro	59	13	
Zen. Up 1 1/4	40	DR	DR	12-	Ng		Roc	11	Fu	5	6.52	M	4	5-C	Tim	53588TW	5.14	A	417	†	Da	88	10	46-2 1/2	10	52-2 1/2	Tim	Ro	15	15	
Hol. DD 2	100	DR	DR	12-	Su	54	Roc	14	Fu	5	6.52	M	2	1500	Tim	56410-PA	5.28	A	598	17 1/2	Da	88	14	52-3	16	58-3	Tim	Ro	16	16	
Hol. Do 2	92	DR	LD	12-120	Su	74	LR	15	Fu	5	8.08	M	2	1500	Tim	L110	4.11	A	696	†	Da	16	16	54-3	17	64-3	Tim	Ro	80	17	
Cum	90	LN	LD	12-110		68	LR	17	Fu	5	6.37	M	2	1600	Tim	Q-110-DPA	4.62	A	15	Da	†	†	†	†	†	†	†	†	†	†	†
Hol. Up 30	30	Fo	Fo	6-130	Op	68	Lg	11	W	3	3.71	M	†	†	†	F3COE	4.86	H	215	10 1/2	Da	40	10	36-1 1/2	12	45-2 1/2	Tim	Gem	64.6	19	
Hol. Up 30	30	Fo	Fo	6-130	Op	68	Lg	11	W	3	3.71	M	†	†	†	†	F3COE	4.86	H	215	10 1/2	Da	40	10	36-1 1/2	12	45-2 1/2	Tim	Gem	64.6	20
Zen. Up 1 1/4	60	DR	DR	12-160	Ce	55	LR	13	Cla	3	3.90	M	4	1400	Tim	†	5.57	A	594	16 1/2	Da	88	12	54-3	12	60-3	Tim	Ro	59	21	
Zen. Up 1 1/4	73	DR	DR	12-160	Ce	65	LR	13	Cla	4	5.00	M	3	1400	Tim	†	7.85	A	796	14 1/2	Da	88	11	50-3	13	63 1/2-3	Tim	Ro	66 1/2	22	
Car. Do 1 1/4	115	DR	DR	12-155	Ce	69	Che	11	Spi	4	4.38	M	2	1600	Tim	L110	4.11	A	†	16	Da	†	11	56-4	14	60-4	Tim	Ro	74.5	23	
Str. Do 80	80	DR	DR	12-155	Ce	66	Spi	13	Spi	4	4.57	M	2	1500	Tim	H110	5.83	A	†	16	Da	†	12	52-3	15	56-3	Tim	Ro	76	24	
Car. Do 80	80	DR	DR	12-155	Ce	64	Che	11	Che	4	7.06	M	2	1400	Tim	53587TW	5.83	A	†	16	Da	†	12	52-2 1/2	15	56-2 1/2	Tim	Ro	76	25	
Str. Do 80	80	DR	DR	12-155	Ce	66	Spi	13	Spi	4	4.57	M	2	1500	Tim	H110	5.83	A	†	16	Da	†	12	52-3	15	56-3	Tim	Ro	82.7	26	
Str. Do 80	80	DR	DR	12-155	Ce	66	Spi	13	Spi	4	4.57	M	2	1500	Tim	H110	5.83	A	†	16	Da	†	12	52-3	15	56-3	Tim	Ro	82.7	27	
Str. Do 80	80	DR	DR	12-155	Ce	66	Spi	13	Spi	4	4.57	M	2	1500	Tim	H110	5.83	A	†	16	Da	†	12	52-3	15	56-3	Tim	Ro	82.7	28	
Car. Do 80	80	DR	DR	12-155	Ce	66	Che	11	Che	4	7.06	M	2	1400	Tim	53587TW	5.83	A	†	16	Da	†	12	52-2 1/2	15	56-2 1/2	Tim	Ro	82.7	29	
Str. Do 80	80	DR	DR	12-155	Ce	66	Spi	13	Spi	4	4.57	M	2	1500	Tim	H110	5.83	A	†	16	Da	†	12	52-3	15	56-3	Tim	Ro	88	30	
Str. Do 80	80	DR	DR	12-155	Ce	66	Spi	13	Spi	4	4.57	M	2	1500	Tim	H110	5.83	A	†	16	Da	†	12	52-3	15	56-3	Tim	Ro	88	31	
Str. Do 80	80	DR	DR	12-155	Ce	66	Spi	13	Spi	4	4.57	M	2	1500	Tim	H110	5.83	A	†	16	Da	†	12	52-3	15	56-3	Tim	Ro	88	32	
Bos. 80	80	DR	DR	12-155	Ce	59	Spi	13	Spi	4	4.57	M	2	1500	Tim	H110	5.71	A	†	16	Da	†	12	52-3	15	56-3	Tim	Ro	96	33	
Own. 100	100	DR	DR	12-180A	Ce	67	Lg	15 1/2	Cla	4	4.88	M	2	1600	Tim	58352WX	4.11	A	646	14 1/2	Da	136	11	53-4	12	62-4	Tim	Ro	84	34	
Own. 100	100	DR	DR	12-150A	Ce	57	Lg	17	Spi	4	3.86	M	2	1700	Tim	59039WX	2.55	A	705	14 1/2	Da	125 1/2	11	58-3	12	72-4	Tim	Ro	84	34	
Zen. Do 1 1/2	60	DR	DR	12-155	Ce	52	GH	17	Spi	3	3.50	M	2	1600	Tim	57452WX	4.37	A	646	14 1/2	Da	69	9	60 1/2-4	12	62-4	Tim	Sag	66 1/2	35	
Zen. Do 1 1/2	60	DR	DR	12-155	Ce	52	GH	17	Spi	3	3.50	M	2	1600	Tim	57452WX	4.37	A	646	14 1/2	Da	69	9	60 1/2-4	12	62-4	Tim	Sag	66 1/2	36	
Own. 85	85	DR	DR	12-126A	Ce	59	Lg	17	Spi	4	4.36	M	2	1600	Tim	57452WX	4.37	A	646	14 1/2	Da	69	9	60 1/2-4	12	62-4	Tim	Sag	73	39	
Zen. Do 1 1/4	85	DR	DR	12-126A	Ce	59	Lg	17	Spi	4	4.36	M	2	1600	Tim	57452WX	4.37	A	646	14 1/2	Da	69	9	60 1/2-4	12	62-4	Tim	Sag	73	40	
Own. 85	85	DR	DR	12-126A	Ce	59	Lg	17	Spi	4	4.36	M	2	1600	Tim	57452WX	4.37	A	646	14 1/2	Da	69	9	60 1/2-4	12	62-4	Tim	Sag	73	40	
Own. 85	85	DR	DR	12-126A	Ce	61	Lg	17	Spi	4	4.36	M	2	1700	Tim	58464WX	3.87	A	764	14 1/2	Da	104	10	60 1/2-4	13	62-4	Tim	Sag	80	41	
Own. 85	85	DR	DR	12-126A	Ce	61	Lg	17	Spi	4	4.36	M	2	1700	Tim	58464WX	3.87	A	764	14 1/2	Da	104	10	60 1/2-4	13	62-4	Tim	Sag	80	42	
Own. 85	85	DR	DR	12-126A	Ce	47	Own	15	Ow	†	†	H	2	1600	Tim	57460WX	4.71	A	646	14 1/2	Da	69	9	60 1/2-4	12	62-4	Tim	Sag	66 1/2	43	
Zen. Do 1 1/4	85	DR	DR	12-126A	Ce	55	Own	15	Ow	†	†	H	2	1600	Tim	57460WX	4.71	A	646	14 1/2	Da	69	9	60 1/2-4	12	62-4	Tim	Sag	66 1/2	44	
Own. 85	85	DR	DR	12-126A	Ce	47	Own	15	Ow	†	†	H	2	1600	Tim	57460WX	4.71	A	646	14 1/2	Da	69	9	60 1/2-4	12	62-4	Tim	Sag	73	45	
Zen. Do 1 1/4	85	DR	DR	12-126A	Ce	55	Own	15	Ow	†	†	H	2	1600	Tim	57460WX	4.71	A	646	14 1/2	Da	69	9	60 1/2-4	12	62-4	Tim	Sag	73	46	
Own. 85	85	DR	DR	12-126A	Ce	48	Own	15	Ow	†	†	H	2	1700	Tim	58470WX	4.71	A	764	14 1/2	Da	104	10	60 1/2-4	13	62-4	Tim	Sag	80	47	
Own. 85	85	DR	DR	12-126A	Ce	48	Own	15	Ow	†	†	H	2	1700	Tim	58473WX	4.71	A	764	14 1/2	Da	104	10	60 1/2-4	13	62-4	Tim	Sag	80	48	
Hol. Do 31	31	AL	AL	6-205	58	Int.	10 7/8	Int	5	6.52	M	3	†	†	†	R1560	5.62	H	421	†	Da	75	†	46-2 1/2	†	54-3	Int	Ro	59	49	
Hol. Do 31	31	AL	AL	6-205	57	Int.	10 7/8	Int	5	6.52	M	3	†	†	†	†	R1560	5.62	H	421	†	Da	75	9	46-2 1/2	11	54-3	Ro	59	50	
Zen. Up 1 1/4	75	DR	DR	12-158	Ce	24	Spi	14	Spi	†	†	H	2	1600	Own	RA106	Var	A	609	15	Da	61	11	62-3 1/2	15	62-4	Own	Gem	55	51	
Zen. Up 1 1/4	75	DR	DR	12-158	Ce	24	Spi																								

TRANSPORTATION ENGINEERING FORMULAS

Providing basic data which can be used conveniently in figuring horsepower, torque, speed, tire revolutions and vehicle performance



PISTON DISPLACEMENT

Piston Displacement in cu. in. = $B \times B \times .7854 \times S \times \text{No. of Cylinders}$

B = Bore
S = Stroke

.7854 = Constant comprising the conversion of the area of a square to the area of a circle of the same dimensions

HORSEPOWER

Maximum Net Horsepower (maximum gross horsepower less power consumed by engine accessories) is the only horsepower that should be used in transportation engineering formulas, and can be determined only by using a dynamometer or may be procured from the manufacturer

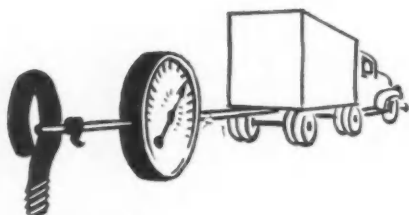
AMA HORSEPOWER

(For License Purposes Only)

$$\text{AMA HP} = \frac{B \times B \times \text{No. of Cyl.}}{2.5}$$

B = Cylinder Bore

2.5 = Constant based on average engine in 1908



DRAWBAR PULL

$$\text{DP} = \frac{.90 \times \text{lb. in Torque} \times \text{FGR}}{R} \quad .012 \text{ GVW}$$

DP = Drawbar Pull

R = Rolling Radius in Inches

FGR = Final Gear Ratio

GVW = Gross Vehicle Weight

.90 = Efficiency for all rear axles except worm, then .85

lb. in Torque = 12 times Torque in lb. ft.

.012 = 12 lb. per 1000 lb. Rolling Resistance

VEHICLE SPEED

$$\text{MPH} = \frac{\text{RPM} \times R}{168 \times \text{FGR}}$$

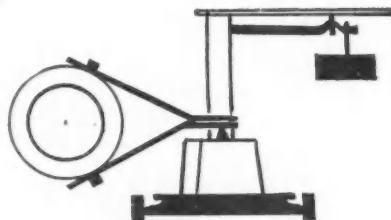
MPH = Miles Per Hour

RPM = Engine Revolutions Per Minute

R = Rolling Radius in Inches

FGR = Final Gear Ratio

168 = A constant comprising the conversion of rolling radius in inches to wheel circumference in feet; wheel revolutions per minute to wheel revolutions per hour; feet per hour to miles per hour



MAX. NET ENGINE TORQUE

Torque in lb. ft. = $.80 \times \text{cu. in. Piston Displacement}$. (This is approximate and should be used only when actual torque is not known)
.80 = Average figure based on analysis of a number of torque curves.

MAXIMUM NET TORQUE

$$\text{Max. Net Torque} = \frac{\text{Torque at Peak HP} \times 5}{4}$$

(This is approximate and should be used only when actual net torque is not known.)

5 and 4 = Figures based on an analysis of a number of torque curves

TORQUE AT PEAK HP

$$\text{Torque at Peak HP} = \frac{\text{HP} \times 5252}{\text{RPM}}$$

5252 = Constant resulting from the conversion of torque and RPM into horsepower

HP = Maximum net horsepower (See Horsepower formula)

Peak HP = Maximum useful horsepower

FINAL GEAR RATIO

$$\text{FGR} = \frac{R \times \text{GVW} \times (\text{GA} + .012)}{\text{lb. in. Torque} \times .90}$$

GA = Grade Ability

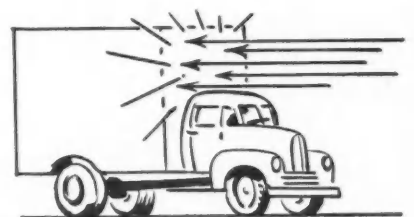
GVW = Gross Vehicle Weight

lb. in. Torque = 12 \times lb. ft. Torque

R = Rolling Radius in Inches

.90 = Efficiency for all rear axles except worm, then .85

.012 = Rolling resistance on hard-surfaced roads



AIR RESISTANCE

Air Resistance = $.0025 \times (\text{MPH})^2 \times \text{FA}$
FA = Frontal area of equipment in sq. ft.
MPH = Miles Per Hour

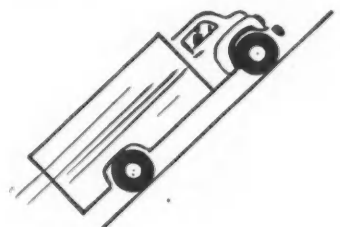
TIRE REV. PER MILE

$$\text{Rev.} = \frac{5280 \times 12}{2 \times 3.1416 \times \text{LR}} \quad \frac{10084}{\text{LR}}$$

Rev. = Revolutions per Mile

LR = Loaded Radius in Inches

Note: Revolutions per mile should be furnished for rear wheel tire on dry level pavement at 35 mph. To predetermine this figure without actual road test, correct calculated rev. per mile as follows: For truck and bus tires, deduct 1 1/2 per cent; For passenger car tires, deduct 2%. Data taken from Tire and Rim Assn. Yearbook.



GRADE ABILITY

$$\text{GA} = \frac{\text{TE}}{\text{GVW}} \text{ minus } .012$$

GA = Grade Ability

TE = Tractive Effort

GVW = Gross Vehicle Weight

.012 = 12 lb. per 1000 lb., rolling resistance on hard-surfaced roads

TRACTIVE EFFORT

$$\text{TE} = \frac{\text{lb. in Torque} \times \text{FGR} \times .90}{R}$$

R = Rolling Radius in Inches

FGR = Final Gear Ratio

lb. in. Torque = 12 times Torque in lb. ft.

.90 = Efficiency for all rear axles except worm, then .85

Truck Specifications Table

OF CURRENT PRODUCTION MODELS

DATA SUPPLIED BY MANUFACTURERS AND TABULATED BY
COMMERCIAL CAR JOURNAL

Key to Definitions, References and Abbreviations

DEFINITIONS

MAKE AND MODEL

Only Domestic Truck Models are listed.

OPTIONAL UNITS

For the express purpose of best fitting the truck to the individual job most of the models listed can be provided with optional engines, transmissions, axles, etc., and these models when so equipped are considered standard stock models.

CHASSIS LIST PRICE

The chassis list price applies to the minimum standard wheelbase with standard tires and standard equipment. All prices are F.O.B. factory. Chassis list price does not include the price of the Cab unless otherwise noted.

RECOMMENDED GROSS VEHICLE WEIGHT FOR NORMAL SERVICE

The Gross Weights published herewith are those supplied by manufacturers as their Recommended Gross Vehicle

Weights for Normal Operating Conditions, and are based upon the Maximum Authorized Tire Size listed. In actual practice the manufacturer may either increase or decrease the gross vehicle weight rating when either favorable or unfavorable operating conditions are involved. Since the proper performance of a motor truck depends upon many factors, including grades, road conditions, etc., the gross weights that a manufacturer is prepared to recommend will vary with particular conditions, and the manufacturer's own standard of safety factors. Specific recommendations, therefore, should be obtained from the manufacturer's representative.

CHASSIS WEIGHT

The chassis weight listed includes the weight of the minimum standard wheelbase chassis, with cowl, with standard tires, with standard equipment, with crankcase and cooling system full, and 5 gallons of fuel in the tank. It does not include the weight of the Cab. This applies to C.O.E. as well as conventional chassis types. Exceptions are noted.

STANDARD TIRE SIZE

The standard tire size listed is that which is included in the Chassis List Price.

MAXIMUM AUTHORIZED TIRE SIZE

The tire size listed in this column is the maximum size recommended by the manufacturer of the chassis for the Gross Vehicle Weight for Normal Operating Conditions. It is furnished at extra cost, if it differs from the standard size. Dual rears are understood; exceptions noted.

MINIMUM STANDARD WHEELBASE

The minimum standard wheelbase is the so-called standard wheelbase on which the Chassis List Price is based.

MAXIMUM STANDARD WHEELBASE

The maximum standard wheelbase is the extreme end of the standard range of wheelbases offered by the chassis maker.

MAXIMUM BRAKE HP.

Maximum Brake Horsepower at Given R.P.M. is actual dynamometer reading without accessories.

GEAR RATIO RANGE

Gear Ratio Range in High—Ratios within the range given are available at no extra cost. Exceptions are noted.

TRACTORS

Unless given the designation (N)—meaning not available as a tractor—all standard models may be assumed to be available as tractors. Exclusively Tractor models are designated (T).

KEY TO REFERENCES

c.f.—Cab Forward design.
c.o.e.—Cab-Over-Engine design.
(D)—Diesel-engine equipped.
(T)—Designed for tractor use only.
(C)—Converted Ford or Chevrolet Model.

KEY TO ABBREVIATIONS

MAKES—ALL

B—Bendix
BL—Brown-Lipe.
Bu or Bud—Buda.
BW—Bendix-Westinghouse
C—Chevrolet.
Cl or Cla—Clark.
Con—Continental.
Cum—Cummins-Diesel.
Eat—Eaton.
F—Ford.
Fu—Fuller.
G-H—Goodyear-Hawley type.
H—Hotchkiss.
Her—Hercules.
HS—Hall-Scott.
L—Lockheed.
LH—Lockheed front, Wagner "hi-Tork" rear.
LT—Lockheed type front, Timken rear.
LW—Lockheed front, Wisconsin rear.
M—Midland.
N.P.—New Process.
O or Ow—Own.
Op or Opt—Optional.
Shu—Shuler.
Spi—Spicer.
T or Tim—Timken-Detroit Axle Co.
Tw—Timken-Detroit—Westinghouse.
TW—Timken-Detroit—Wisconsin.
WG—Warner Gear.
Wau—Waukesha.
W or Wis—Wisconsin.
Wg—Wagner "hi-Tork".
Ws—Westinghouse.
WW—Westinghouse or Wagner

WHEELS DRIVEN

2F—Forward unit of Rear Axle Group.
2R—Rear Unit of Rear Axle Group.
4R—Forward and rear units of Rear Axle Group.
—All wheels.

BRAKES—SERVICE

Location

4—Four Wheels, front and rear.
4r—Four Wheels, rear only.

Type

I—Internal.
X—External.

Operation

A—Air.
H—Hydraulic.
V—Vacuum.
D or Dp—Dual Primary

BRAKES—HAND

Location

C—Center of double propeller shaft.
2—Rear wheels.
4—Four wheels.
6—Six wheels.
P—Back of Power Divider.
J—Jackshaft.
T—Transmission.
F—Driveshaft.

Type

D—Tru-Stop disk.
I—Internal.
M—Mechanical.
X—External.
PD—Two drums on rear of power divider.

BRAKE DRUMS

Material

a—Cast alloy iron.
A—American Car Foundry
c—Cast iron.
Cc—Composite Front, Cast Iron in rear.
Ce—Centrifuge.
Cl—Copper iron.
Co—Composite.
D—Dayton.
E—Ermalite.
G—Gunite.
N—Nickel Iron.
S—Steel.

(Where a combination of any of the above is used, the first reference mark applies to the front and the second to the rear drums.)

FRAME

Type

C—Channel.
T—Channel tapered front and rear.
L—Channel reinforced with liner.
B—Channel reinforced with both liner and fishplate.
P—Channel reinforced with plate.
TL—Channel tapered front and rear reinforced with liner.
D—Drop Center.
Tf—Tapered front.
A—Straight section sidemembers, lined with oak inserts.
Z—Reinforced (X) member frame, box type sections.

REAR AXLE

Final Drive and Type

B—Bevel.
CD—Chain Drive
F—Full-floating.
H or Hy—Hypoid.
d—Dual range axle.
2—Double Reduction.
S—Spiral bevel.
W—Worm.
 $\frac{3}{4}$ —Three Quarters Floating.
 $\frac{1}{2}$ —Semi-Floating
T—Torque Tube

GEAR RATIOS

(**) Only one ratio.

Drive and Torque

H—Hotchkiss (springs).
R—Radius Rods.
L—Parallel Torque Rods
T—Torque Arm.

GOVERNOR STANDARD

Y—Yes.
N—No.

COST RECORD

"MACK DIESEL TRUCKS PAY FOR THEMSELVES"

That's the good word coming in from long-haul operators all over the country. Many of these Mack diesel owners find that Mack diesels pay back their extra investment in less than a year—in fuel savings alone.

Reporting on the cost-slashing performance of a Mack Model EQT diesel tractor, one mid-western hauler* says: "From the first day we put this diesel tractor in operation it has been averaging 8.6 miles per gallon, hauling 34,000 lb. payloads. Compared with a gasoline-powered tractor hauling the same loads, running side-by-side, this Mack EQT diesel is saving me far better than 50% in actual fuel costs. At this rate, our Mack diesel will more than pay for itself in no time at all."

Profit-making economy like this can be yours, too, when you switch to Mack diesels. Whether you operate in the 45,000 to 58,000 g.c.w. range, covered by the Model EQT—or up to 73,000 lbs. g.c.w.—there's a thrifty Mack diesel that will give you two-way savings in more miles per gallon at less cost per gallon. See your nearest Mack branch or distributor for a demonstration of what Mack diesel power can do for you.

*Name on request

MACK MODEL EQT DIESEL is proving the answer to lower fuel costs and increased profits for numerous operators in the popular hauling range—45,000 to 58,000 lbs. g.c.w.

**Be Profit-Wise
modernize with**



Mack Trucks, Inc., Empire State Building, New York 1, New York. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

†—Front only; Rear 10.00/20.
 Δ—Front only; Rear 8.25/20.
 ‡—For shorter wheelbases—103 1/4".
 †—Auxiliary trans. Spicer 6231B, three forward speeds.
 ‡—Front only; Rear 8.25/16.
 †—Auxiliary trans. Spicer 703F, three forward speeds.
 ‡—Front only; Rear 9.00/20-10.
 †—Front only; Rear 9.00/20-10.



2-ton shown with 15-foot van body—1½-ton also available

New pulling power—staying power—earning power!

ALMOST everywhere you look in a Studebaker truck, you find important improvements in design that cut operating costs.

The massive, pressed-steel Studebaker truck frame, for example, extends well beyond the rear axle for increased load protection and lengthened body life.

The front of the frame is reinforced with a rigid, twist-resisting, special K-member—an exclusive new Studebaker method of strengthening the whole forward structure of the truck.

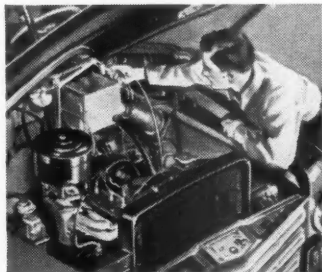
Gas-saving automatic overdrive, too!

Studebaker's gas-saving automatic overdrive is now available in all ½ ton and ¾ ton models. It's extra cost but starts paying its way right away in extra thrift.

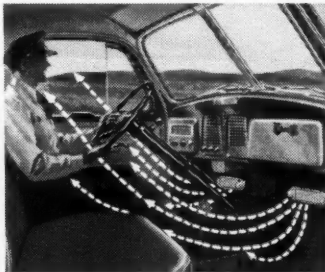
Stop in and see the Studebaker trucks—½ ton, ¾ ton, 1 ton, 1½ ton, 2 ton models.

STUDEBAKER TRUCKS

Noted for low-cost operation



Just lift the hood! Everything's easy to get at! No standing on a box is necessary when you want to work on the engine or the ignition! No stooping under the dash to find instrument panel wiring! Everything is within easy arm's reach.



Foot-controlled floor ventilation airs the roomy Studebaker cab! Wide seat. Comfortable Adjusto-Air cushion. Extra large windshield and windows. Weather-protected steps enclosed inside doors. Tight-gripping rotary door latches.



Studebaker's streamlined ½ ton, ¾ ton and 1 ton pick-ups have double-walled heavy-gauge metal body—tail gate hinged at center and each end—loads slide on and off with ease. Big-visibility rear window aids backing and parking.



Wear-resisting Studebaker craftsmanship is the pride of father-and-son teams and thousands of other trustworthy Studebaker workmen. They build long-lasting soundness into all Studebaker trucks.

Studebaker, South Bend 27, Indiana, U. S. A.

- Reinforcement 6.58x2.21x 125 extended to include front spring rear brackets and rear spring front brackets.
- Reinforcement 8.5x2.50x 15 starts at front spring rear brackets and ends behind rear spring front brackets.

Optional on F-8, Front 16x2¼. Rear 16½x5¼.

—Reinforcement 8.5x2.56x.15 starts at front spring rear brackets and ends behind rear spring front brackets,

†—Reinforcement 5.0x2.50x.10 starts at front spring rear brackets and ends behind rear spring front brackets.

†—Rate \$200.00 optional on F-8, front 10x2.5. Rear 10x2.50x.10. \$200 for 6.25/15 tires.

(Turn to Page 146, Please)

50



Reflecting 39 years of
progress in Oil Control!

Sealed Power

MD-50 STEEL OIL RING

The only ring with the FULL-FLOW SPRING

Best—even in
BADLY TAPERED
and
OUT-OF-ROUND BORES

Sealed Power Corporation
Muskegon, Michigan

Muskegon, Michigan
Sealed Power Corporation

OUT-OF-ROUND BORES

and
BADLY TAPERED

Best—even in

The only ring with the FULL-FLOW SPRING

MD-50 STEEL OIL RING

Sealed Power

progress in Oil Control!

Reflecting 39 years of



Sealed Power Piston Rings

BEST IN NEW TRUCKS

BEST IN OLD TRUCKS

Line Number	MAKE AND MODEL	WHEEL-BASE		Gross Vehicle Weight for Normal Service	Chassis Weight (See definition)	TIRE SIZES		Standard Front and Rear (Duals un-authorized tire size)	MAKE AND MODEL	ENGINE DETAILS						TRANSMISSION		REAR AXLE		FRONT AXLE	BRAKES				FRAME																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
		Minimum Standard	Maximum Standard			No. of Cylinders, Bore and Stroke	Displacement			Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M.	Number Main Bearings	Governor Standard	Make and Model	Forward Speeds	Make and Model	Gear and Type	Drive & Torque		Gear Ratio	Range in High	Make and Model	Location		Type	Operation	Lining Area	Drum Area	Hand Location	Material	Drum Type	Side Rails (Min. Std. W. B.)	Type																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
1	Reo	125	125	8000	4400	7.00/20S	8.25/20S	8.25/20S	Own 245	6-34	192	9.5	89	3100	7	YWG T97	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300	4	Tim E300



ONE OF THE FEATURES THAT SOLD US *Wagner* Air Brakes IS THE *Rotary Air Compressor*



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CHICAGO 41 91-23

ST. LOUIS TERMINAL
GENERAL OFFICE
811 FINE AVENUE
CHICAGO 11 91-23

REPLY REFER TO

October 12, 1949

Wagner Electric Corporation
6400 Plymouth Avenue
St. Louis 14, Missouri

Gentlemen:

Maintenance economy is a factor that must be considered if over-the-road fleet operations are to be profitable.

For this reason we are especially careful in the selection of all material and equipment used on our fleet. It must be of high quality to enable it to stand up under hard use.

Our experience with Wagner Air Brakes has been very satisfactory. They have what it takes to operate efficiently and economically in tough, over-the-road service.

One of the features that sold us on Wagner Air Brakes is the Rotary Compressor. After years of operation we have not had a single compressor failure — they've got to be good to stand up like this on many of our hauls where brake applications are frequent.

Very truly yours,

NIGHTHAWK FREIGHT SERVICE, INC.

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FOR BRAKE SERVICE ECONOMY ...Wagner Air Brakes are YOUR BEST BUY

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Cost-wise truck operators across the nation know that Wagner Air Brakes offer greater value than any other brake. For brake safety and economy install Wagner Air Brakes on your trucks, tractors, trailers and buses. When you order new equipment specify WAGNER. Write for Bulletin KU-50.



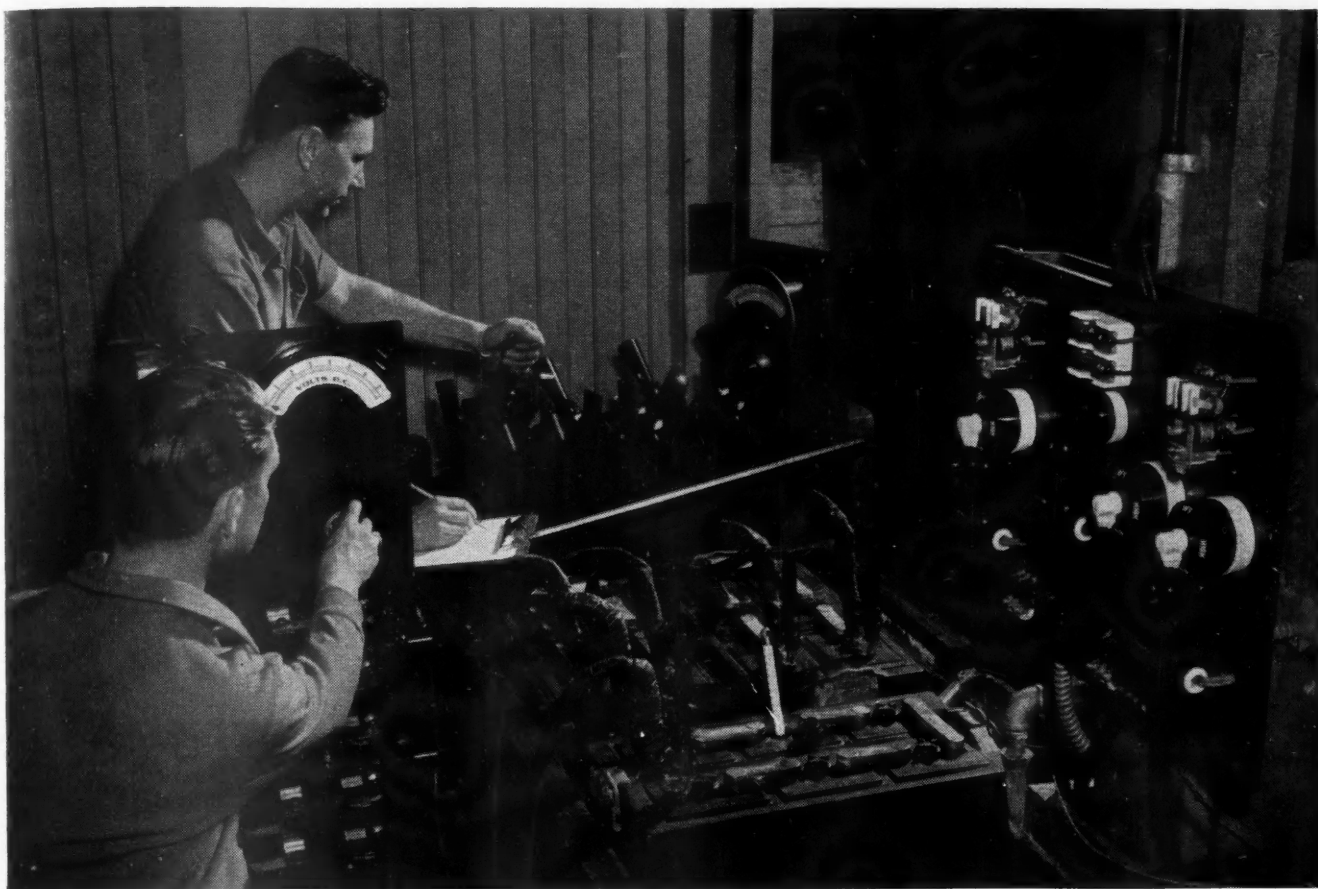
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[illegible]



The tough overcharge test where Exide Batteries "get the works"

It's one of many tests that Exide Batteries must pass to make sure that they will give you top performance in rugged service. To fleet owners, whose trucks are used chiefly during the daytime when overcharging is most frequent, this test is of major importance.

The test shows how plates and separators stand up under continuous overcharge . . . not for a brief period, but for as long as 48 weeks, and at an average temperature of 100° F.

Results of the overcharge test show that Exide Batteries greatly exceed the minimum requirements of the S.A.E. standard. This and other tests assure you that when your batteries are Exides, you can count on dependable performance, long battery life, minimum maintenance and low cost per mile of operation.

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

"Exide" Reg. Trade-mark U.S. Pat. Off.



Service-proved features that make Exide outstanding for motor truck service

- Heavy, oversize plates.
- Greater capacity.
- Self-cleaning, non-spitting vent plugs.
- Double insulation between plates.
- "Bull's-Eye" electrolyte leveling device.
- Heavy inter-cell connectors.
- Hard rubber container.
- Positive cover seals.

1888 . . . DEPENDABLE BATTERIES FOR 62 YEARS . . . 1950

COMMERCIAL CAR JOURNAL, April, 1950

149

ro-two speed transfer case.
1091 cu. in.
Complete vehicle with pick-up type body.
Trunk 177 2-speed Transfer Case.

Rear only: Front 6.00 16.
Includes cab.

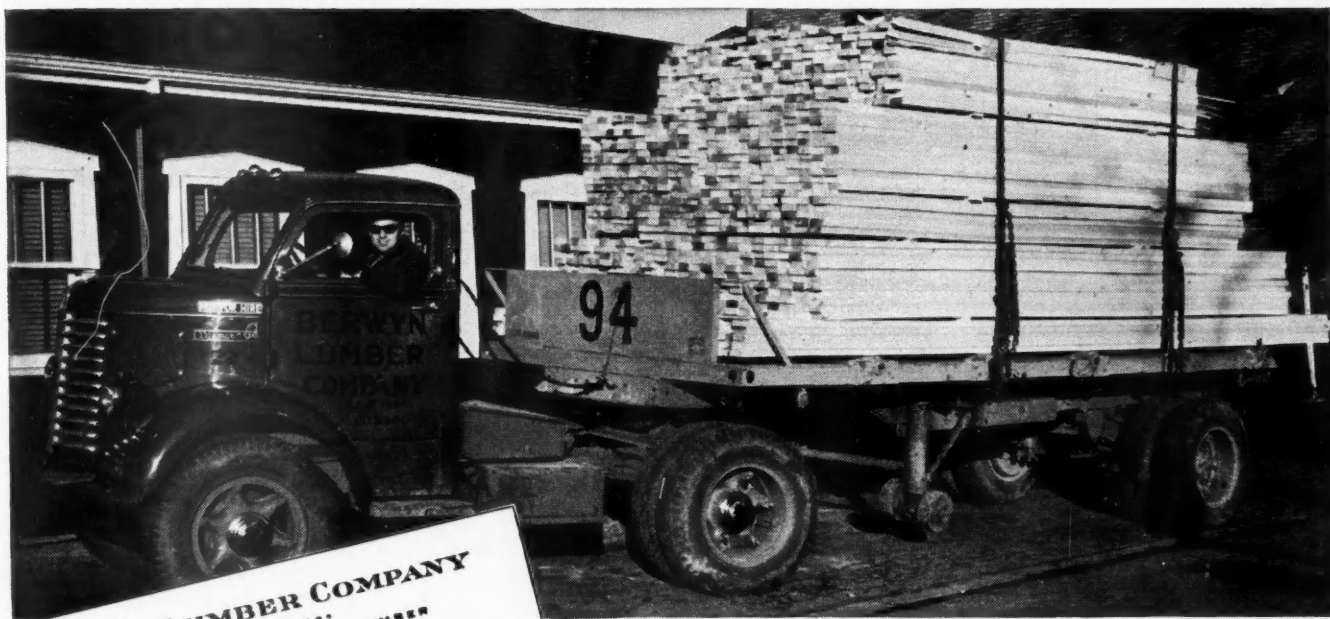
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1950

Line Number	MAKE AND MODEL	Chassis List Price	WHEEL-BASE		Gross Vehicle Weight (See definition)	TIRE SIZES	ENGINE DETAILS				TRANSMISSION		REAR AXLE		FRONT AXLE	BRAKES				FRAME							
			Minimum Standard	Maximum Standard			No. of Cylinders, Bore and Stroke	Displacement	Comp. Ratio	Torque lb. ft.	Max. Brake H.P. at R.P.M.	Main Bearings	Governor Standard	Make and Model		Forward Speeds	Make and Model	Gear and Type	Drive & Torque		Gear Ratio	Range in Mph	Make and Model	Service	Hand Location	Dimensions (Min. Std. W. B.)	Type
1	Willlys Jr., CJ-3A		80	3500	*2105	7.0/158	7.0/158	Ow'n CJ-3A	4-3 1/2x4 1/2	134 1/2	5105	60-4000	2-33x5.48	NWG T90C	36 Spl 41	Hy 5 1/2	H 5 1/2	5.38 Spl 25	B4H	118	198	F	42.38x5.22x3	P	4x1 1/2x3 1/2	P	
2	Willlys Jr., AWD		118	5300	*3115	7.0/168	7.0/168	Ow'n 473	4-3 1/2x4 1/2	134 1/2	4114	72-4000	2-33x5.48	NWG T90C	36 Spl 41	Hy 5 1/2	H 5 1/2	5.38 Spl 21	B4H	176	276	F	42.38x5.22x3	P	4x1 1/2x3 1/2	P	
3	Corbett		173	34500	8.25/20	9.00/20	9.00/20	Con B0427	6-4 1/2x4 1/2	427 1/2	9325	127-2600	7-3 1/2x1 1/2	YFu 5A430	5 TIm 1055	84F	L 5-7 1/2-7.40	35000	W661A	731	1058	A	TX	88	8 1/2x3 1/2x3 1/2	TL	
4	G402R40-4R		173	4000	8.25/20	9.00/20	9.00/20	Con HRB6000	6-4 1/2x4 1/2	427 1/2	9325	127-2600	7-3 1/2x1 1/2	YFu 5A430	5 TIm 1055	84F	L 5-7 1/2-7.40	35000	W661A	731	1058	A	TX	88	8 1/2x3 1/2x3 1/2	TL	
5	(D) D802R40-4R		136	4600	10.00/20	11.00/22	11.00/22	Cum HRB6000	6-5 1/2x4 1/2	743 1/2	540	165-1800	4-3 1/2x1 1/2	YFu 5C720	10 TIm SW3022	WF	L 4-7 1/2-6.17	1120	W661A	1032	1578	A	2M	68	8 1/2x3 1/2x3 1/2	TL	
6	(D) D802R40-4R		188	4600	10.00/20	11.00/22	11.00/22	Cum HRB6000	6-5 1/2x4 1/2	743 1/2	540	165-1800	4-3 1/2x1 1/2	YFu 5C720	10 TIm SW3022	WF	L 4-7 1/2-6.17	1120	W661A	1032	1578	A	2M	68	8 1/2x3 1/2x3 1/2	TL	
7	Dodge, B-1-VX		154	34000	9.00/20	10.00/20	10.00/20	Ow'n T159	6-3 1/2x4 1/2	331 1/2	5270	128-3000	7-3x11.2	YNP 88450	5 TIm SBD1555	HyF	6.8-7.2	T-3500	O61A	727	1056	C	TX	84	10 1/2x3 1/2x3 1/2	CP	
8	Duplex, RH6		162	220	9180	8.25/20	9.00/20	Her JXD	6-4 1/2x4 1/2	320 1/2	2240	113-3000	7-3 1/2x1 1/2	YFu BR33A	10 TIm SBD1055	BF	L 6.8-6.16	T-3500	L61HV	513	839	A	TX	83	8 1/2x3 1/2x3 1/2	L	
9	Duplex, RH6		160	220	9180	8.25/20	9.00/20	Her WXL-C3	6-4 1/2x4 1/2	404 1/2	531 1/2	139-2600	2-3 1/2x1 1/2	YFu 5A43	5 TIm SD3010	2F	L 6.8-6.15	T-3500	W661A	1075	1525	A	TX	73 1/2	10 1/2x3 1/2x3 1/2	L	
10	(D) RH6		172	208	16000	11.00/20	12.00/20	Cum HB600	6-4 1/2x4 1/2	672 1/2	498	160-1800	7-4 1/2x1 1/2	YFu 5A430	5 TIm SD3010	2F	L 6.8-6.15	T-3500	W661A	1137	1625	A	TX	77 1/2	10 1/2x3 1/2x3 1/2	L	
11	Federal, 663MA		189	225	14500	10.00/20	10.00/22	Con R6002	6-4 1/2x4 1/2	602 1/2	466	205-3000	7-3 1/2x1 1/2	YFu 5A65	15 T SW3012P	WF	R 6.8-6.16	T-3500	W661A	1082	1569	A	TD	108	10 1/2x3 1/2x3 1/2	T	
12	(D) 663MA		189	225	14500	10.00/20	10.00/22	Con R6002	6-4 1/2x4 1/2	602 1/2	466	205-3000	7-3 1/2x1 1/2	YFu 5A65	15 T SW3012P	WF	R 6.8-6.16	T-3500	W661A	1082	1569	A	TD	108	10 1/2x3 1/2x3 1/2	T	
13	(D) 663MA		189	225	14500	10.00/20	10.00/22	Con R6002	6-4 1/2x4 1/2	602 1/2	466	205-3000	7-3 1/2x1 1/2	YFu 5A65	15 T SW3012P	WF	R 6.8-6.16	T-3500	W661A	1082	1569	A	TD	108	10 1/2x3 1/2x3 1/2	T	
14	(D) 663MA		189	225	14500	10.00/20	10.00/22	Con R6002	6-4 1/2x4 1/2	602 1/2	466	205-3000	7-3 1/2x1 1/2	YFu 5A65	15 T SW3012P	WF	R 6.8-6.16	T-3500	W661A	1082	1569	A	TD	108	10 1/2x3 1/2x3 1/2	T	
15	(D) 663MA		189	225	14500	10.00/20	10.00/22	Con R6002	6-4 1/2x4 1/2	602 1/2	466	205-3000	7-3 1/2x1 1/2	YFu 5A65	15 T SW3012P	WF	R 6.8-6.16	T-3500	W661A	1082	1569	A	TD	108	10 1/2x3 1/2x3 1/2	T	
16	(D) 663MA		189	225	14500	10.00/20	10.00/22	Con R6002	6-4 1/2x4 1/2	602 1/2	466	205-3000	7-3 1/2x1 1/2	YFu 5A65	15 T SW3012P	WF	R 6.8-6.16	T-3500	W661A	1082	1569	A	TD	108	10 1/2x3 1/2x3 1/2	T	
17	(D) 663MA		189	225	14500	10.00/20	10.00/22	Con R6002	6-4 1/2x4 1/2	602 1/2	466	205-3000	7-3 1/2x1 1/2	YFu 5A65	15 T SW3012P	WF	R 6.8-6.16	T-3500	W661A	1082	1569	A	TD	108	10 1/2x3 1/2x3 1/2	T	
18	Freightliner		176	54000	*14000	10.00/22	10.00/22	Cum NHB	6-5 1/2x4 1/2	743 1/2	131	575	200-2100	7-4 1/2x1 1/2	YFu 4B86	12 Own	WF	H 6.6-6.8	20 TIm 27061	O4RIA	966	1450	A	TD	136	10 1/2x3 1/2x3 1/2	D
19	F.W.D., H6x6		Opt	Opt	*2150	9.00/20D	10.00/20	Wau MZA	6-4 1/2x4 1/2	404 1/2	629	128-2800	7-2 1/2x1 1/2	YFu 5A43	10 Own H	2F	L 6.8-6.16	T-3500	L61HV	647	1281	A	T6	Opt	10 1/2x3 1/2x3 1/2	T	
20	(D) H6x6		Opt	Opt	*2150	9.00/20D	10.00/20	Wau MZA	6-4 1/2x4 1/2	404 1/2	629	128-2800	7-2 1/2x1 1/2	YFu 5A43	10 Own H	2F	L 6.8-6.16	T-3500	L61HV	647	1281	A	T6	Opt	10 1/2x3 1/2x3 1/2	T	
21	(D) H6x6		Opt	Opt	*2150	9.00/20D	10.00/20	Wau MZA	6-4 1/2x4 1/2	404 1/2	629	128-2800	7-2 1/2x1 1/2	YFu 5A43	10 Own H	2F	L 6.8-6.16	T-3500	L61HV	647	1281	A	T6	Opt	10 1/2x3 1/2x3 1/2	T	
22	Kenworth, (D) 522		191	255	43000	10.00/20	11.00/22	Cum HB6	6-4 1/2x4 1/2	672 1/2	500	150-1800	7-4 1/2x1 1/2	YBL 8241	4 T SW3012P	WF	H 5-9.1	76 TIm FE900N	W661A	880	1368	A	TD	100	9 1/2x3 1/2x3 1/2	C	
23	(D) 522 4R		191	255	43000	10.00/20	11.00/22	Cum HB6	6-4 1/2x4 1/2	672 1/2	500	150-1800	7-4 1/2x1 1/2	YBL 8241	4 T SW3012P	WF	H 5-9.1	76 TIm FE900N	W661A	880	1368	A	TD	100	9 1/2x3 1/2x3 1/2	C	
24	(D) 522 4R		191	255	43000	10.00/20	11.00/22	Cum HB6	6-4 1/2x4 1/2	672 1/2	500	150-1800	7-4 1/2x1 1/2	YBL 8241	4 T SW3012P	WF	H 5-9.1	76 TIm FE900N	W661A	880	1368	A	TD	100	9 1/2x3 1/2x3 1/2	C	
25	(D) 522 4R		191	255	43000	10.00/20	11.00/22	Cum HB6	6-4 1/2x4 1/2	672 1/2	500	150-1800	7-4 1/2x1 1/2	YBL 8241	4 T SW3012P	WF	H 5-9.1	76 TIm FE900N	W661A	880	1368	A	TD	100	9 1/2x3 1/2x3 1/2	C	
26	(D) 522 4R		191	255	43000	10.00/20	11.00/22	Cum HB6	6-4 1/2x4 1/2	672 1/2	500	150-1800	7-4 1/2x1 1/2	YBL 8241	4 T SW3012P	WF	H 5-9.1	76 TIm FE900N	W661A	880	1368	A	TD	100	9 1/2x3 1/2x3 1/2	C	
27	(D) 522 4R		191	255	43000	10.00/20	11.00/22	Cum HB6	6-4 1/2x4 1/2	672 1/2	500	150-1800	7-4 1/2x1 1/2	YBL 8241	4 T SW3012P	WF	H 5-9.1	76 TIm FE900N	W661A	880	1368	A	TD	100	9 1/2x3 1/2x3 1/2	C	
28	(D) 522 4R		191	255	43000	10.00/20	11.00/22	Cum HB6	6-4 1/2x4 1/2	672 1/2	500	150-1800	7-4 1/2x1 1/2	YBL 8241	4 T SW3012P	WF	H 5-9.1	76 TIm FE900N	W661A	880	1368	A	TD	100	9 1/2x3 1/2x3 1/2	C	
29	(D) 522 4R		191	255	43000	10.00/20	11.00/22	Cum HB6	6-4 1/2x4 1/2	672 1/2	500	150-1800	7-4 1/2x1 1/2	YBL 8241	4 T SW3012P	WF	H 5-9.1	76 TIm FE900N	W661A	880	1368	A	TD	100	9 1/2x3 1/2x3 1/2	C	
30	(D) 522 4R		191	255	43000	10.00/20	11.00/22	Cum HB6	6-4 1/2x4 1/2	672 1/2	500	150-1800	7-4 1/2x1 1/2	YBL 8241	4 T SW3012P	WF	H 5-9.1	76 TIm FE900N	W661A	880	1368	A	TD	100	9 1/2x3 1/2x3 1/2	C	
31	Marmon-Herr		156	22500	*6850	7.50/20	7.50/20	Ford	8-3 1/2x4 1/2	239 1/2	4180	100-3800	3-2 1/2x1 1/2	NFord	4 TImken	S	H 8-8	6.67 Own M5	F-H	503	836	F	82 1/2	7 1/2x3 1/2x3 1/2	C		
32	(D) R5-6		156	22500	*6850	7.50/20	7.50/20	Ford	8-3 1/2x4 1/2	239 1/2	4180	100-3800	3-2 1/2x1 1/2	NFord	4 TImken	S	H 8-8	6.67 Own M5	F-H	503	836	F	82 1/2	7 1/2x3 1/2x3 1/2	C		
33	(D) R5-6		156	22500	*6850	7.50/20	7.50/20	Ford	8-3 1/2x4 1/2	239 1/2	4180	100-3800	3-2 1/2x1 1/2	NFord	4 TImken	S	H 8-8	6.67 Own M5	F-H	503	836	F	82 1/2	7 1/2x3 1/2x3 1/2	C		
34	(D) R5-6		156	22500	*6850	7.50/20	7.50/20	Ford	8-3 1/2x4 1/2	239 1/2	4180	100-3800	3-2 1/2x1 1/2	NFord	4 TImken	S	H 8-8	6.67 Own M5	F-H	503	836	F	82 1/2	7 1/2x3 1/2x3 1/2	C		
35	(D) R5-6		156	22500	*6850	7.50/20	7.50/20	Ford	8-3 1/2x4 1/2	239 1/2	4180	100-3800	3-2 1/2x1 1/2	NFord	4 TImken	S											

USER REPORT:

"Our Fleet of 25 Trailers is equipped with Warner Electric Brakes... We only spent \$129.18 in 1949 for Maintenance Parts"



BERWYN LUMBER COMPANY
ESTABLISHED 1888
YELLOW PINE & PACIFIC COAST LUMBER
RAILWAY MATERIAL - OAK
BERWYN, ILLINOIS
(INCORPORATED IN ILLINOIS)

CHICAGO BRANCH
LITCHFIELD 1-8178
BERWYN BRANCH
STANLEY 3400

WESTERN OFFICE
4008 2nd
PITTSBURGH
PORTLAND, OREGON

December 8, 1949

Warner Electric Brake Mfg. Co.
Beloit, Wisconsin

Gentlemen:

Our fleet of 25 trailers is equipped with Warner Electric Brakes. The first electric brakes were purchased in 1924 and some of these brakes are still in service.

We deliver in the Chicago area covering a radius of approximately 100 miles. We have been told that 10,000 miles of city driving is equal to 50,000 miles on the highways. If these figures are correct, you can readily see our brakes must give exceptional service.

Orval Elack, our Service Manager, is a Warner enthusiast because of the limited amount of service required on Warner Electric Brakes. In fact, I have his report in front of me and find we only spent \$129.18 in 1949 for maintenance parts.

Yours very truly,
C. F. Willis
BERWYN LUMBER COMPANY
Vice President

CPW:lej



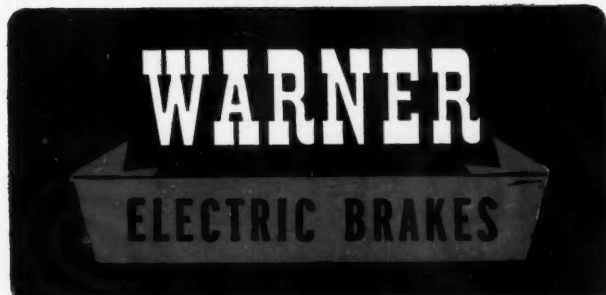
ONCE a Warner Electric Brake user — always a Warner Electric Brake user. Read Mr. Willis' letter and you'll see why!

Warner Electric Brakes are specifically engineered to meet every trailer braking need. No other brakes equal their rugged construction, long lining life, positive control and dependable performance even under the most severe conditions, of rain, snow and ice.

Being activated by electricity, they are instantaneous in action — a vital factor in emergencies.

CHECK YOUR BRAKE PERFORMANCE AND MAINTENANCE COSTS! If you want maximum safety plus economical performance, standardize on Warner Electric Brakes. Write for illustrated literature explaining their many advantages.

WARNER ELECTRIC BRAKE MFG. CO.
BELOIT, WISCONSIN



SINCE 1927

- ◆ Includes Cab.
- ◆ Front only; Rear 8.25/20.
- ◆ Front only; Rear 11.00/24.
- ◆ Rear only; Rear 11.00/24.
- ◆ Available with optional rear axles.
- ◆ Available with 11.00/22 or 12.00/20 tires for G.V.W. of 50,000 lbs. and optional front and rear axles.
- † Auxiliary transmission, Spicer 8031.
- † Two speed axle with vacuum shift.
- † A Rear only; Front 12.00/24.
- ‡ Front only; Rear 9.00/20.
- ‡ Front only; Rear 10.00/20.
- ‡ With Baumis auxiliary transmission.
- ‡ With Baumis power divider.
- ¶ Two speed axle available—6.13-8.10.
- ¶ Including slip-over reinforcing frame channels.
- ¶ With Baumis power divider.
- ◆ Composite Cast Alloy Iron.
- ◆ Cast Alloy Iron.
- ◆ Single front dual rear.

Manufacturing and sales rights for Ford Motor Coaches have been purchased by Marmon-Herrington Co., Inc., Indianapolis, Ind., it was announced by David M. Klausmeyer, president of the Marmon-Herrington Co. These coaches now will be manufactured and sold as "Marmon-Herrington Motor Coaches."

Marmon-Herrington Motor Coaches will be marketed through the existing nationwide organization of independent dealers who have, heretofore, served as the distribution outlet for Ford Metropolitan Motor Coaches. These dealers maintain their own sales and service organizations, repair shops and parts depots. They will continue to serve coach line operators in their respective territories as in the past.

Two models offered consist of a bus seating 27 to 29 passengers, and a larger vehicle seating 31 to 35 passengers. Both models will continue to be powered by the Ford 105 hp. 6-cyl engine.

It is understood that Marmon-Herrington plans to continue present models as nearly as possible without change. It is expected that all major parts will be interchangeable with the existing Ford Buses, as sold through Metropolitan Motor Coaches, Inc.

With the acquisition of this new business, the Marmon-Herrington Co. rounds out its

IT TAKES THE **EXTRA POWER** OF
FEDERAL Trucks
 TO MOVE BIG LOADS . . .



*Federals Have Won . . .
 By Costing Less to Run*

Let **FEDERALS** Make More Money for You!

There are many important reasons why operating costs are less . . . profits greater with Federal trucks on the job. They have the rugged strength to "take it" on the toughest of hauling schedules . . . the power and high torque characteristics to assure the handling of bigger payloads, in less time, with a minimum of down time. Back of this dependable performance are hundreds of money saving features, including powerful engines . . . rugged hypoid axles . . . big, fast acting brakes . . . husky frames . . . easy steering and all-safety construction. Put a Federal truck on your job and you will see what we mean. See your Federal dealer today.

55 MODELS
 $\frac{3}{4}$ to 35 Tons
 449 Combinations

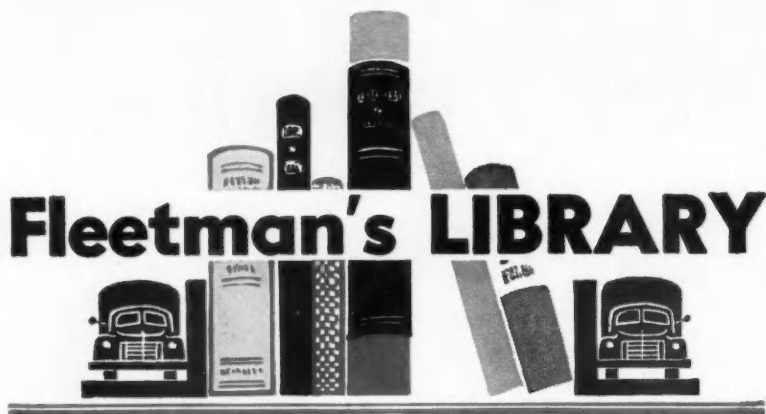
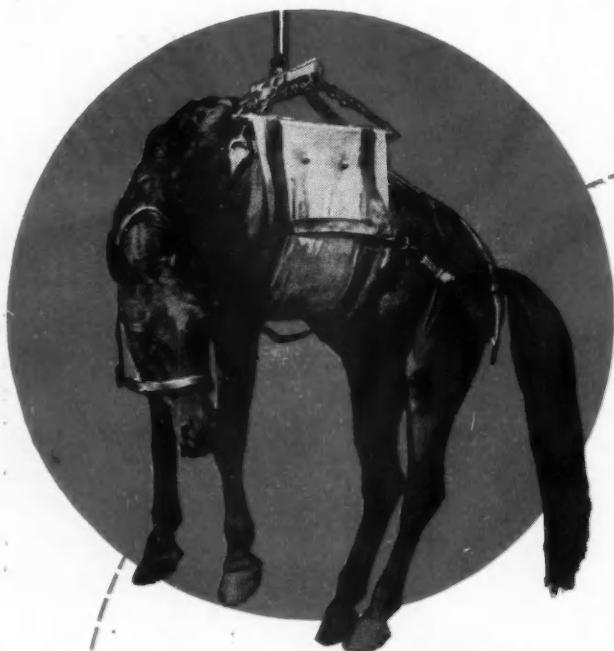
with gross ratings to over 90,000 pounds, including a broad range of tandem axle units. Write today for illustrated line folder.



FEDERAL MOTOR TRUCK COMPANY • Detroit 9, Michigan, U.S.A.



Fleetman's LIBRARY

A Sure Bet!

Here's one horse you can bet on every time, with complete assurance you're backing a winner. It's Thermoid's "Horse of a different color"—used to demonstrate Thermoid's Thermodized Pre-Stretching Process—which checks fan belt failure before it starts. A Thermodized Pre-Stretched Fan Belt was actually used to support the weight of a 1500 pound horse. Afterward, it was returned to service in the car from which it was borrowed and it worked perfectly at the original adjustment, showing no permanent stretch had occurred. For long life and completely dependable service under the most severe operation conditions, specify *Thermoid* when you're ordering fan belts. They're a sure bet—every time!



Thermoid

Brake Linings • Fan Belts • Radiator Hose • Hydraulic Brake Parts and Fluid • Clutch Facings • Car Mats • Thermoid Precision Process Equipment.

Thermoid Company • Trenton, N. J.

WORK BENCHES, bulletin 701, contains information and illustrations describing construction, sizes, models and includes ordering instructions, for all types of benches and accessories. Write Standard Pressed Steel Co., Jenkintown, Pa.

BRAKE SHOE CHART, providing easy, quick identification of brake shoes for all passenger cars and popular Ford and Chevrolet trucks, can be obtained at cost from Wagner CoMax jobbers or Wagner Electric Corp., St. Louis, Mo.

DIESEL ENGINE DATA, bulletin 5296, containing complete specifications of the HRBB-600 and HRBBI-600 Cummins Diesels, can be obtained through local Cummins dealers or by writing the Cummins Engine Co., Inc., Columbus, Ind.

SHOP NOTES ON WELDING HEAT-TREATED STEEL FRAMES, a 2-page bulletin on welding techniques, gives suggestions for getting maximum service from heat-treated steel frames. It covers selection of weld wire, methods of welding and positioning of the weld. Write Parish Pressed Steel Co., Reading, Pa.

HARDWARE CATALOG, describes and lists a complete line of hardware available for truck bodies, trucks, trailers, buses, taxicabs and miscellaneous other uses. Practical applications are clearly illustrated and explained. Submit request to The Eberhard Mfg. Co., Cleveland, Ohio.

CERTIFIED JOB STUDY NO. 2, a 4-page bulletin describing in detail the handling methods which resulted in savings for one manufacturer, is available on request to Towmotor Corp., Cleveland, Ohio.

D-C WELDERS, booklet DB 26-100, describes the new 200-, 300-, and 400-amp 60-percent duty cycle selenium rectifier d-c welders. Included is engineering information on relative power costs, performance characteristics, construction details, dimensions and weights. Write Westinghouse Electric Corp., Pittsburgh, Pa.

AUTO-BAKE, a 4-page bulletin describing a mobile infra-red paint drying oven, presents 11 engineered advantages of this oven. It includes complete specifications for six models, which are available to service cars, trucks, trailers and buses. Write American Brake Shoe Co., Rochester, N. Y.

OIL FILTER AND REPLACEMENT CARTRIDGE CATALOG, describes in 16 pages and three colors the Pick magnetic oil filter. It features a cross referenced chart and an alphabetical list of vehicles showing interchangeability between original equipment and Pick cartridge replacements. Obtained on request to Pick Mfg. Co., West Bend, Wis.

STOP CORROSION WITH METALLIZING, a 4-page report, describes with illustrations numerous applications of corrosion protection by metallizing with zinc. Write for METCO News, Vol 4-12, Metallizing Engineering Co., Inc., Long Island City, N. Y.

(TURN TO PAGE 157, PLEASE)

Fleetman's Library

Continued from page 154

HIGHWAY CAPACITY MANUAL, includes a detailed study of the effect of various roadway and traffic conditions on the flow of vehicles, on both rural and urban highways. It contains data on the capacities of rural 2-lane and multi-lane highways, and information relating to traffic flow at grade intersections, weaving sections, grade separations and ramps, effects of parking on city streets and the relation of hourly to annual average traffic volumes. Copies can be obtained for 65 cents from the Office of the Superintendent of Documents, Washington, D. C.

SIL-7 CATALOG, a technical data sheet, describes a combination cleaner, polish and coating which is neither a wax nor a glaze. Write Silicone Products Corp. of America, Cleveland, Ohio.

CUMMINS DIESELS, two bulletins containing drawings, photographs and specifications of the two V-type, 12-cylinder NVHS-1200 and NVH-1200, can be procured from local Cummins dealers or by writing Cummins Engine Co., Inc., Columbus, Ind.

POWER TOOLS, three circulars describing the Thor "Copper Line" tools, Model 35 sinker rock drill, and four mining tools, are available at Thor branch offices or by writing Independent Pneumatic Tool Co., Aurora, Ill.

RUBATEX INSULATION HARDBOARD, a 20-page technical manual, contains information concerning application of this expanded rubber compound for low temperature insulation. Write Rubatex Div., Great American Industries, Inc., Bedford, Va.

BEST'S SAFETY DIRECTORY for 1950-1951, covering the entire field of safety, fire protection and control, hygiene, first-aid and sanitation, is now available. Price is \$5.00—Alfred M. Best Co., 75 Fulton Street, New York 7.

ELECTRODE CATALOG, 16 pages of descriptions, data on applications, welding procedures, mechanical properties and specifications of electrodes, can be obtained by writing to Hobart Bros. Co., Troy, Ohio.

WELDING MACHINE CATALOG, contains 36 pages of descriptive text giving features operating data, specifications of AC and DC machines. Write Air Reduction Sales Co., N. Y. C.

CUTTING MAINTENANCE COSTS WITH ALUMINUM BRONZE ELECTRODES, describes in four pages the successful salvage and repair of many worn or broken parts. Write Ampco Metal, Inc., Milwaukee, Wis.

BRAKE DRUM LATHE CATALOG, contains answers to questions such as; "Can I afford a Brake Drum Lathe?" and "How much business can I expect?" and the selection of a drum lathe. Obtained upon

request from the Dixie Machine Tool, Cincinnati, Ohio.

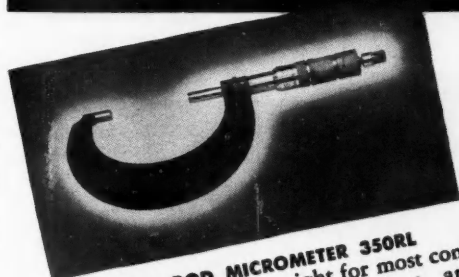
THERE'S PROFIT IN LOW COST MOTOR REPAIRS, a 4-page folder describing modern techniques in engine reconditioning, available from The Sunnen Products Co., St. Louis, Mo.

UNIVERSAL LUBRICATING EQUIPMENT, an illustrated 20-page catalog just issued by Universal Lubricating Systems, Inc., Oakmont, Pa., lists and describes fittings, adaptors and lubricators developed by the company.

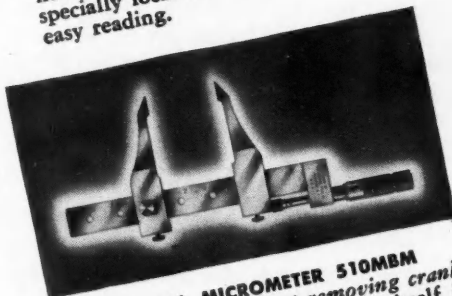
CUMMINS DIESELS—Sixty-eight high-speed diesels for automotive, industrial and marine applications, covering the entire power range from 50 to 550 hp, and three medium-speed diesels, are described in a new 36-page condensed catalog just issued by Cummins Engine Company, Inc., Columbus, Ind.

GENERAL PURPOSE HOISTS, two catalogs illustrated with operating pictures and illustrations of mechanical parts and assemblies for hoists ranging from 5 to 100 hp, can be procured from the American Hoist & Derrick Co., St. Paul, Minn.

YOU'LL LIKE THESE MIKES!



CONNECTING ROD MICROMETER 350RL
Range (1 1/2" to 2 1/2") is right for most connecting rod journals. Graduations are specially located on underside of barrel for easy reading.



MAIN JOURNAL MICROMETER 510MBM
Measures journals without removing crankshaft from engine. Soon pays for itself in time saved. Range 0 to 5". This tool, recently introduced, is already acclaimed by hundreds of users.

**CENTRAL MIKE
FITS 'EM RIGHT!**



For Half a Century, Specialists in Fine Micrometers

**CENTRAL TOOL
COMPANY**

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CENTRAL
Certified Accuracy
MICROMETERS



WILLYS Adds

Four-cyl. engine with 7.4 com

WITH the introduction of its 1950 line, Willys-Overland Motors, Inc., offers two new engines of higher compression ratio and increased performance, one of which is a 4-cyl F-head.

The F-head engine is basically the same in most respects as the original 4-cyl engine, except for the introduction of the new head and its valve train. Cylinder blocks, rods, pistons, crankshaft and other parts remain interchangeable. The only change below the head comes in the use of a new camshaft to introduce a new set of cams for the intake valves but without changing the cycle of events. Exhaust valve cams remain unchanged.

Although the exhaust valves remain the same in basic design and in timing, the shift to relatively high compression ratio made it desirable to provide added protection through use of "free" type exhaust valve rotators and hard facing of exhaust valves.

The F-type cylinder head, features an asymmetric form of combustion chamber with suitable quench area. The spark plug is inclined from one side and located almost immediately over the exhaust valve. The intake valve has a diameter of 2-in. and is slightly inclined to the vertical axis. Having such large area at the intake port, it was feasible to reduce intake valve lift to 0.260 in. but still retain greatly increased breathing capacity. At the same time gas velocity is reduced from 311 to 274 ft per sec. The reduction in valve lift has a salutary effect on the intake valve train since it is possible to provide motion multiplication of 1.29 to 1 in the rocker arm linkage with relatively small light parts, thus producing a rigid and quiet action. Valve clearance is held to 0.018 in.

The F-head engine is offered with three optional compression ratios—for export, 6.9; standard, 7.4; for high altitude operation, 7.8. It will give satisfactory operation on regular grades of fuels of 75-octane rating. It is claimed that the F-head design is singularly free from detonation and is not carbon-conscious.

Compared with the I-cylinder, L-head engine the F-head model gives increased torque and greatly increased horsepower over a wider range. The gain in fuel economy may be gaged

For a Better Switch... Better Switch to ARROW



Check the features of the new Arrow Directional Signal Switch against those of any switch on the market, then switch to Arrow for safe, sure protection... for a better switch at a lower price.

POSITIVE PROOF INDICATION. One feature alone makes it worth the low cost. That's a tell-tale jewel light that tells you whether your signal lights are working—not just the switch. If one or more of your lights are out, or there is a break in the lamp circuit, the jewel light will indicate that the system is not functioning perfectly.

FINGER-TIP CONTROL. Adjustable handle can be moved in and out to provide finger-tip control regardless of the size of the steering wheel.

EASE OF INSTALLATION. Separate mounting bracket fits any size steering column merely by tightening a screw—a matter of seconds.

BUILT-IN PROTECTION. Built-in line fuse prevents short circuit caused by improper wiring from affecting other lights in your vehicle.

DEPENDABILITY. Tested for over 175,000 cycles.

ATTRACTIVE, MODERN DESIGN. Compact, good-looking.

The new Arrow switch is available for 6- or 12-volt systems, with standard or with stop-light-proof wiring-harness, with or without a flasher mounted in the switch case, and for a 2-light or 4-light hook-up. It can be used in combination with any Arrow Signal Lights or with any system now in use.

See the amazing new Arrow switch at your dealer's today.



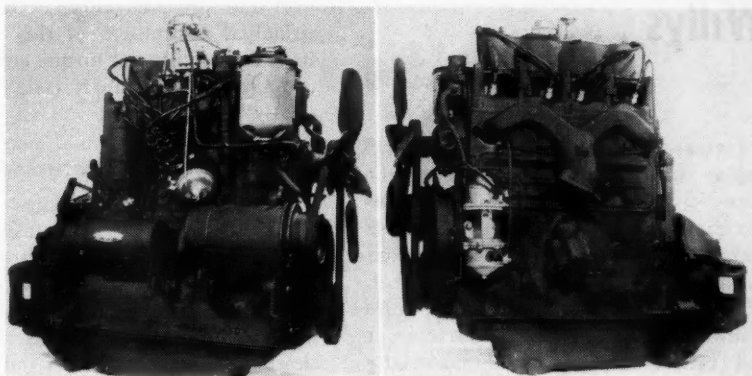
SAFETY AFTER DARK

ARROW SAFETY DEVICE COMPANY • MOUNT HOLLY, NEW JERSEY

F-Head Engine

pression ratio develops 72 hp

LEFT. The 1950 1/2-tonner features restyled front end, new F-head, 4-cyl. engine. **ABOVE RIGHT,** Left side of engine showing accessibility of fuel pump and spark plugs. **ABOVE LEFT,** Right side of engine showing grouping of major accessories



Condensed Specifications

Type	L-Head	F-Head	L-Head
No. Cyl	4	4	6
Bore (in)	3 1/8	3 1/8	3 1/8
Stroke (in)	4 3/8	4 3/8	3 1/2
Displacement (cu in.)	134.2	134.2	160
Compression Ratio			
Standard	6.48	7.4	7.1
Export	....	6.9	....
High Alt	....	7.8	....
Bhp (max)	63 @ 4000	72 @ 4000	75 @ 4000
Torque (lb ft) (Av.)	105 @ 2000	114 @ 2000	125 @ 2000
No. main bearings	3	3	4

from the fact that the L-head engine consumes about 0.575 lb/bhp hr while the F-head consumes only 0.49 lb/bhp hr. This is even more significant at around 85 per cent load where the F-head shows an increase of 25 per cent in fuel economy.

Willys two-wheel drive Station Wagons, Jeepster models, and panel delivery jobs have an improved Planadyne suspension. This incorporates a semi-elliptic, multiple-leaf spring mounted transversely at the front. Spring leaves have rubber inserts at their ends to control friction.

Willys offers the following restyled models for 1950:

Jeepster (standard model) with F-head, 4-cyl engine and without overdrive.

Jeepster Custom with 6-cyl engine, including radio, heater, and deluxe accessories as standard equipment.

Station Wagons—models with 4-cyl F-head engine; and 6-cyl engine.

One-ton, four-wheel drive truck with 4-cyl F-head engine.

Half-tonner with two-wheel drive equipped with 4-cyl F-head engine.

The Half-tonner replaces the previous 3/4-ton model which is discontinued as of 1950. It is important to note that the Universal Jeeps as well as the 4 x 463, four-wheel drive station wagon models are continued for the present without any change in styling or powerplants. These models, therefore, remain exactly the same as in 1949.

(TURN TO PAGE 160, PLEASE)

The NEW



VL FIRE EXTINGUISHERS



Every motor vehicle, every garage, repair shop and spray booth needs the protection of the Buffalo better-built VL Fire Extinguisher, now more dependable than ever. Each VL Extinguisher now contains DRYEX, the exclusive new drying agent that removes all traces of moisture, prevents corrosion and rust, insures continuous accuracy of performance and adds many years to the dependable life of the extinguisher.



Write us for full information on **DRYEX** and name of your nearest Buffalo distributor.

BUFFALO FIRE APPLIANCE CORPORATION
DAYTON 1, OHIO

Established 1895

Willys

Continued from Page 159

Increased performance from the 6-cyl engine was attained by opening the bores $\frac{1}{8}$ in. Since the stroke remains the same, all of the component parts remain unchanged except for pistons and rings. Compression ratio is 7.1 to 1.

This engine weighs only 21 lb more than the F-head model. Horsepower and torque are increased materially

over the previous model. One of the principal advantages of this engine is its exceptionally flat torque curve which drops to only 107 lb ft (min) at practically idling speeds.

Chassis Features

Intake manifold passages are cast within the head in "glove-fashion," the carburetor being mounted directly onto the head. This is said to give excellent mixture distribution since the difference in the length of passages from the shortest to the longest is quite small.

In addition, the intake passages are completely heated by means of the water jacketing and thus are effectively heated throughout the range of operation. In fact, Willys claims a definite gain in volumetric efficiency because of the elimination of hot spot heating.

Pressure lubrication to the rocker arm mechanism is provided by oil lines leading directly from the camshaft bearings.

Willys Improves Deep-Fording Jeeps

The new U. S. Army MC Deep Fording Jeep manufactured by Willys-Overland Motors, Inc., retains the basic characteristics of the present civilian Jeep with the addition of several developments and improvements which make it a much more efficient and durable vehicle than the water fording jeeps used in the last war. A waterproof electrical system developed by Electric Auto-Lite has been instrumental in making these improvements possible.

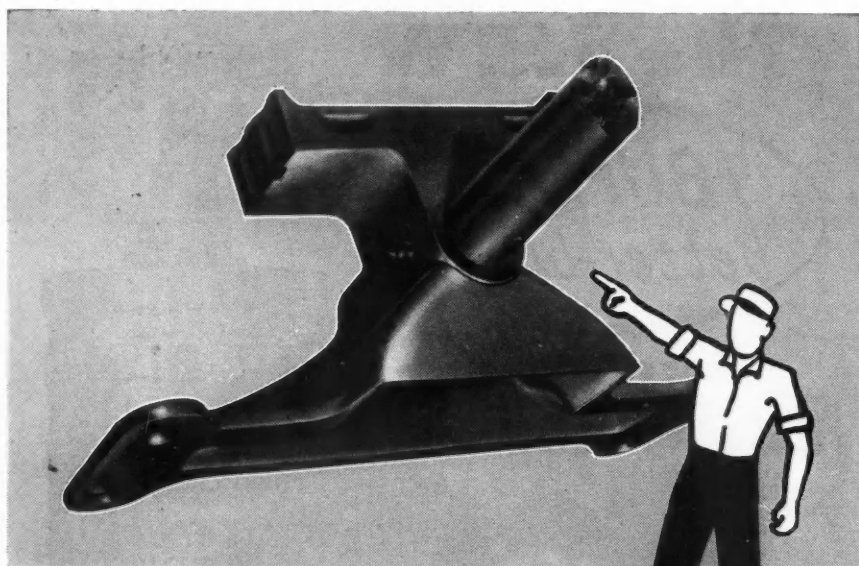


The 24-volt electrical system has a maximum rating of 25 amperes at 28½ volts. This added power is needed for efficient operation of more powerful electrical equipment. Distributor and coil are combined in one hermetically sealed unit. The ignition harness is shielded and waterproofed. Headlamps, tail lamp, horns, wiring, switches, instruments, windshield wiper motor, wiring connections, generator, starter motor, regulator, and spark plugs are all waterproofed.

This equipment is designed to withstand the corrosive attack of frequent salt water immersion and to operate in extremes of temperature ranging from 70 deg below zero to 160 deg above zero F. Many new developments enable the units to withstand these conditions and operate continuously for 1000 hours—equivalent to 30,000 miles of ordinary passenger car driving—without maintenance.

Sealing water out of the engine was one of the major problems encountered in the underwater Jeep. Two valves are provided in the crankcase ventilation system. When the Jeep is driven on dry

(TURN TO PAGE 162, PLEASE)



This NEW Feature in Holland Fifth Wheels has a Double Bearing on Wear Reduction



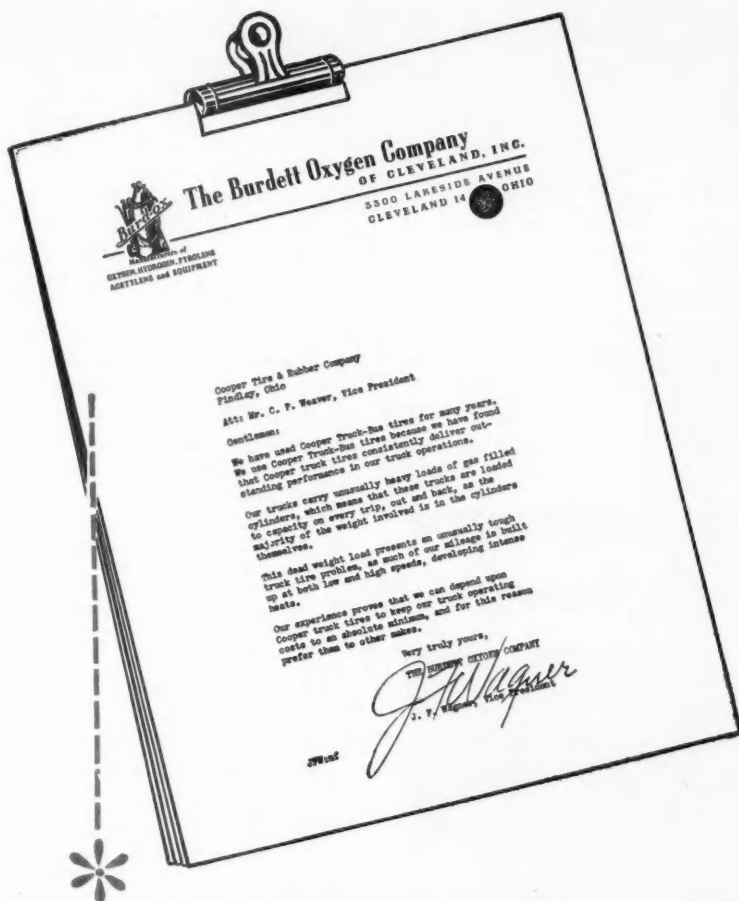
OLD DESIGN
SHAFT BEARINGS
CARRIED ENTIRE WEAR ON
TWO WEIGHT-HOLDING
POINTS



DUO-BRACKET BEARING DI-
VIDES WEAR BETWEEN FOUR
WEIGHT TAKE-UP POINTS

This newly engineered Duo-Bracket rocker shaft bearing on Holland Fifth Wheels takes a good bit of the load off the two shaft bearings, and thereby reduces the wear that otherwise concentrated entirely on the bearings. It is another of the engineered, tested features that make it so desirable to standardize on Holland Fifth Wheels for uninterrupted service and long life. Contact your nearby Holland Hitch Distributor for details, or write to the company.

HOLLAND HITCH CO. HOLLAND, MICHIGAN



**profit by
the
experience
of others**



"Our trucks carry unusually heavy loads of gas filled cylinders, which means that these trucks are loaded to capacity on every trip . . .

"This dead weight presents an unusually tough truck tire problem, as much of our mileage is built up at both low

and high speeds, developing intense heats.

"Our experience proves that we can depend upon Cooper truck tires to keep our truck tire costs to an absolute minimum . . ."

The Burdett Oxygen Company
Cleveland, Ohio



Costs Cut to a New Low by Cooper Distributed Stress Construction

Check the records of Cooper truck tire users and you'll find case after case where costs have been cut to a new and timely low. And the reason is Cooper Distributed Stress Construction — the tire development that places extra strength directly under the tread, plus extra strength at the shoulders and sides.

The result is a uniformly stronger, more resilient Cooper truck tire that runs cooler, runs longer because there are no weak points to cause localized flexing and high friction heat. Meaning that more original miles and more recap miles can now be yours — and without extra cost. Your Cooper truck tire dealer has the facts — so call, call him today. Cooper Tire & Rubber Company, Factories at Findlay, Ohio.



Users Say:

Cooper

truck tires make payloads more profitable.

Willys

Continued from Page 160

land, the valves are in the open position. This allows the engine to build up a vacuum in the crankcase, which is the normal method of venting. However, when the engine is driven under water, the valves are closed. This allows the engine to build up a pressure in the crankcase which aids in keeping water out. To further insure against

leakage newly designed crankshaft seals are installed both front and rear and a waterproofed oil bath air cleaner is provided.

Special venting is accomplished by connecting all vent lines to the main air intake pipe. The main units which have been vented are the carburetor float chamber, fuel tank, front and rear axles, brake master cylinder, distributor, windshield wipers, transmission and transfer case.

Another provision for deep fording is the shielded bellhousing which restricts the flow of water around the

clutch. In deep fording operation the clutch acts as a water brake, therefore, by restricting the water flow to the clutch, the pumping action of the clutch is reduced and the braking effect on the engine is lessened permitting higher engine and vehicle speeds under water.

Many units have also been rust-proofed to insure against faulty operation. The water pump shaft is made of stainless steel. A stainless steel clutch release bearing, prepacked for life with special grease, is furnished. On this model the clutch pressure plate is rust-proofed by cadmium and chrome plating. The driven disc is cadmium plated and furnished with special water resistant facings which will not stick to the flywheel or pressure plate after use in water.

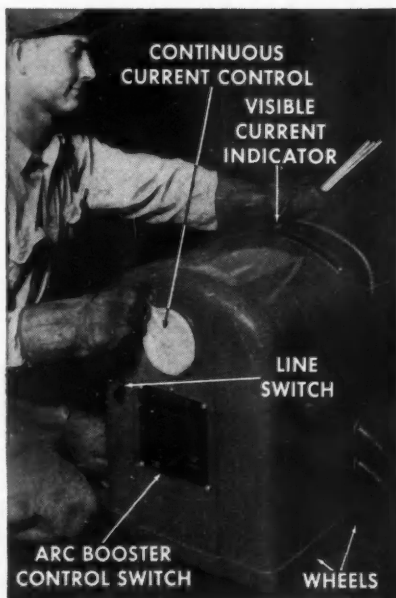
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Fabricates Skid Rail on tractor fifth wheel by speedily arc welding a steel strap to frame work with the "Fleetwelder."



Reinforces Trailer Body by adding steel sections and plate where heavy stresses are developed from severe highway service.



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HANDLES WIDE RANGE OF JOBS. Whether it's welding light gauge metal for body covering or repairing heavy steel body frame members, "Fleetwelder's" broad, selective welding range does your job better, faster and at a lower cost. "Fleetwelder's" easy-to-strike-arc, made possible with its exclusive "Arc Booster" eliminates bothersome electrodes sticking . . . assures you of higher quality welding on every type of job. It's easy to install . . . operates on single phase power . . . built for long, rugged service through Lincoln's famous industrial type construction . . . yet sells for only \$180.00, less than any comparable arc welder today.

TRY THE "FLEETWELDER" YOURSELF. Get full details in the free Bulletin 1301. See your local Lincoln Weldealer or write The Lincoln Electric Company, Cleveland 1, Ohio.

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THE LINCOLN ELECTRIC COMPANY
Dept. 321, Cleveland 1, Ohio

Sales Offices and Field Service Shops in All Principal Cities



ATA Spring Meet

The tentative program for the ATA Spring Meeting (Chicago, May 8-12) has been announced in part. Following is a list of subjects which will be covered by the battery of speakers:

Council of Safety Supervisors

- "Use and Value of Psychophysical Testing Devices."
- "Methods of Administering Tests."
- "How Telebinocular Tests Are Used."
- "Progress in the Harvard Safety Study."
- "The Tachograph as a Method of Driver Supervision."
- "Road Patrol"—A panel discussion of Organization and Use.

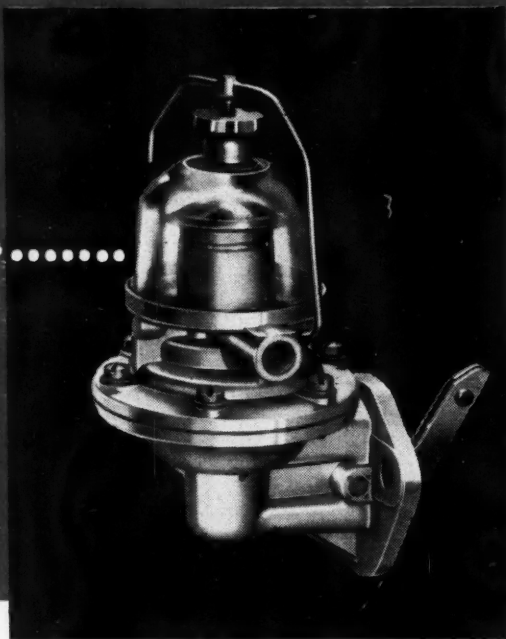
Equipment and Maintenance Council

- "Gross Weight and Weight-Power Relationship to Fuels and Time Economy."
- "A Method of Predicting the Performance of Commercial Motor Vehicles."
- "Possibilities in the Army Air-Cooled Engines in Civilian Truck Service."
- "Why Change Oil?"
- Round Table—"Road Failures—A Joint Problem of Operation and Maintenance."
- Round Table—"Tire Recapping Practices and Results."

Terminal Operations Council

- "Training Courses for Highway Freight Terminal Managers."
- "A Way to Use Fork-Lift Trucks on a Motor Carrier Freight Dock."
- "A Centralized Checking System for a Highway Freight Terminal."
- "Straight Trucks v. Short Semitrailers for City Delivery."
- Round Table—"How We Select and Train Terminal Branch Managers."
- Round Table—"What Percentage of Spare Trailers Above Scheduled Runs Are Necessary for Efficient Terminal Operations?"
- Round Table—"Routine for Handling Freight Bills and Manifests."
- Round Table—"Procedures for Checking Accumulated Weight of a Trailer's Lading During Loading to Avoid Axle Overweights."

NO HEART TROUBLE HERE!



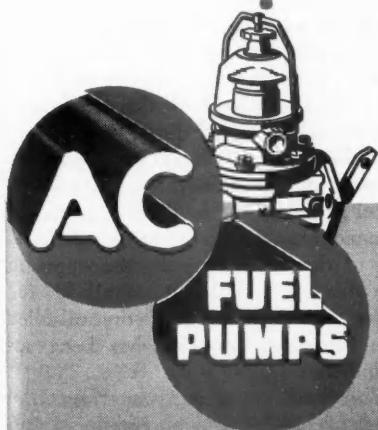
"Heart of the Fuel System" on 40,000,000 trucks, buses and passenger cars, the AC Fuel Pump has held its leadership for 23 years.

Fleet owners prize it for its amazing ability to keep them out of trouble. With periodic inspection . . . regular cleaning . . . replacement at regular intervals . . . the AC Fuel Pump helps to give their vehicles the reliability necessary to profitable operation.

That's why the AC Fuel Pump is a symbol of quality among fleet owners everywhere . . . quality in design . . . quality in manufacture.

To avoid the "heart trouble" that means costly delays, always use the AC Fuel Pump, Heart of the Fuel System.

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION



AC SPARK PLUGS



AC OIL FILTERS



AC CABLE AND CASING



AC AIR CLEANERS

preferred on millions of vehicles



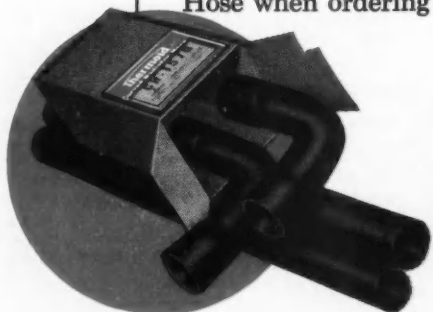
91 HP Engine Po

Model 322 features new cab 130-in

Quick-detachable fenders, improved cab mounting, single-piece windshield characterizes new 1 1/2-ton model. Cab is 69 in. wide

**Get
This
Straight!**

... or get it curved. It's top-quality Thermoid Radiator Hose—made to original equipment specifications and proven to be better wherever the going's toughest. Because it resists deterioration due to heat, anti-freeze and chemicals, Thermoid Radiator Hose lasts far longer. Use it on *all* your equipment. Safeguard against restricted circulation caused by premature hose collapse. To reduce maintenance costs, specify Thermoid Radiator Hose when ordering from your regular supplier.



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Thermoid Company • Trenton, N. J.

DIAMOND T has added a new low-priced 1 1/2-ton Model 322 in the volume-production field, rated for 14,500 lb gross vehicle weight. Cab and engine improvements characterize this heavy-duty-type truck. The safety steel cab is the same as that pioneered for the recently introduced Models 420, 520 and 620 and includes the no-draft, full-vision features with one-piece curved windshield without center post. This cab has a four-point flexible mounting and the "quick detachable" fenders.

The improved QXLD engine, developed jointly by Diamond T and Hercules, has a bore and stroke of 3 7/16 in. x 4 1/4 in. and piston displacement of 236 cu in. It develops 91 hp. at 3200 rpm.

The engine has a heat-treated alloy iron block, 7 main bearings with 79 sq in. of tri-metal bearings, and precision-type rod bearings. It has the latest type of gear-driven and independently mounted water pump with positive oil seal. Improved cylinder head design with bosses for mounting accessories is retained and a larger radiator provides substantially increased cooling capacity.

New gears assure quieter front-end drive and thin-skirted aluminum pistons are closely fitted. Improvement of intake and exhaust valves has been combined with linger tappet guides and a new camshaft to aid silent valve action. A larger and heavier flywheel, with a larger bell housing and increased clutch ventilation, combines with the vibration damper to radically reduce torsional vibration. The flywheel gear has 112 teeth, instead of 97, to encourage easier starting. Relocation of the fuel pump on the opposite side from the exhaust manifold for cooler operation and of the oil-filler pipe for easier servicing has been accomplished.

Wheelbase options run from the standard 130 in. to a maximum of 166

Power 14,500 lb. DIAMOND T

130-in. wb., 236-cu in. Hercules engine

in. with standard cab-to-axle dimensions and full length frames for bodies up to 14 ft. A special 190-in. wheel-base with one-piece side rails for 48-passenger school buses has been added to the line.

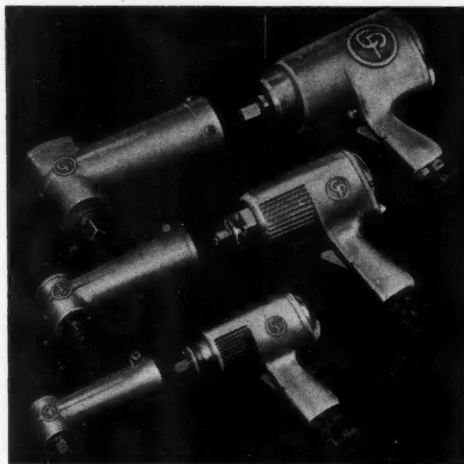
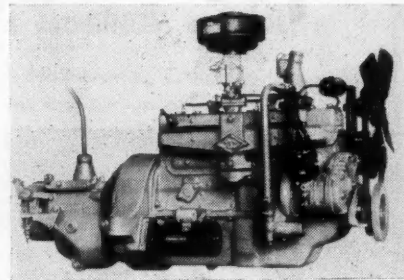
The cab combines design and construction features with appearance, durability and driver comfort facilities of wide extent. It has full Marshall springs in the driver's seat and stainless steel door handles, window and instrument panel trim. Cab width has been increased 10 in. to a full 69 in. with double-wall construction of heavy gage steel. It is also being offered in a deluxe version which includes a divided seat and other features. In addition to the single piece windshield with self-adjusting electric wipers, there are two large safety plate glass windows in the rear panel.

A new mounting system floats cab and sheet metal as a single rigid unit entirely isolated from the effects of frame distortion. Cab, cowl, fenders, hood and radiator support are locked together into a truss-type structure that maintains accurate alignment with no relative movement between any of the parts. This unit is carried by a rubber and spring-mounted rocker arm at the rear of the cab and a similar flexible mounting under the radiator support channel, with a lighter intermediate mounting at each side of the frame. These supporting points form a diamond pattern and are located where there is negligible relative movement regardless of frame twisting, so that cab and sheet metal ride undistorted and unaffected by maximum wheel and axle displacements.

The front axle is of the drop-forged, I-beam type with wide track and the hypoid bevel rear axle is full floating with double Timken wheel bearings directly above the tires. Axle shafts can be removed without taking off the wheels. They are pinion straddle mounted on three rows of bearings. All gears and shafts are of alloy steel and the one-piece forged housing is of heat-treated steel.

The 1350 series 2-speed axle is continued as an option without a change in rating when it is supplied. Where 8.25 x 20 tires are specified heavier front and rear springs and a B-K
(TURN TO PAGE 168, PLEASE)

Hercules engine has 3 7/16 in. bore, 4 1/4 in. stroke. Larger flywheel reduces torsional vibration. Fuel pump has been relocated opposite the exhaust



*for
any
nut*

on car or truck



CP-730, CP-750 and CP-770 wrenches are available in handy lightweight, metal carrying cases with set of sockets and angle head attachment.

To handle any bolt, screw or nut—to 1 1/4" bolt size—there's just the right CP Air Impact Wrench—in the world's *only complete line*—with angle heads, for awkward-spot jobs, available for every size.

Controllable impact—the twist of a knob regulates power—insures running on each nut exactly to proper tightness.

Capacities: CP-730 to 7/16" bolt size; CP-750 to 5/8" bolt size; CP-770 to 1" bolt size; CP-365 to 1 1/4" bolt size.

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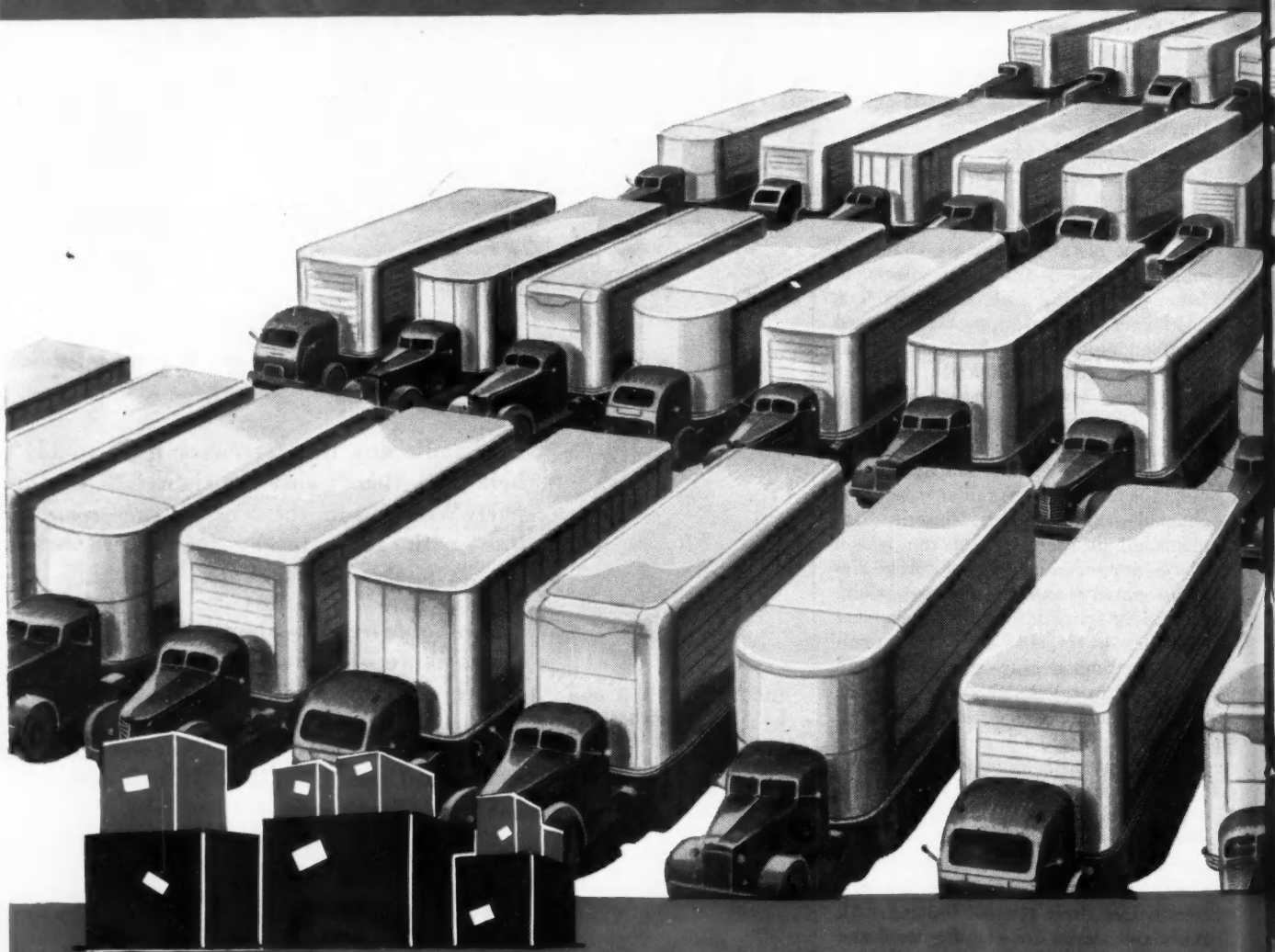
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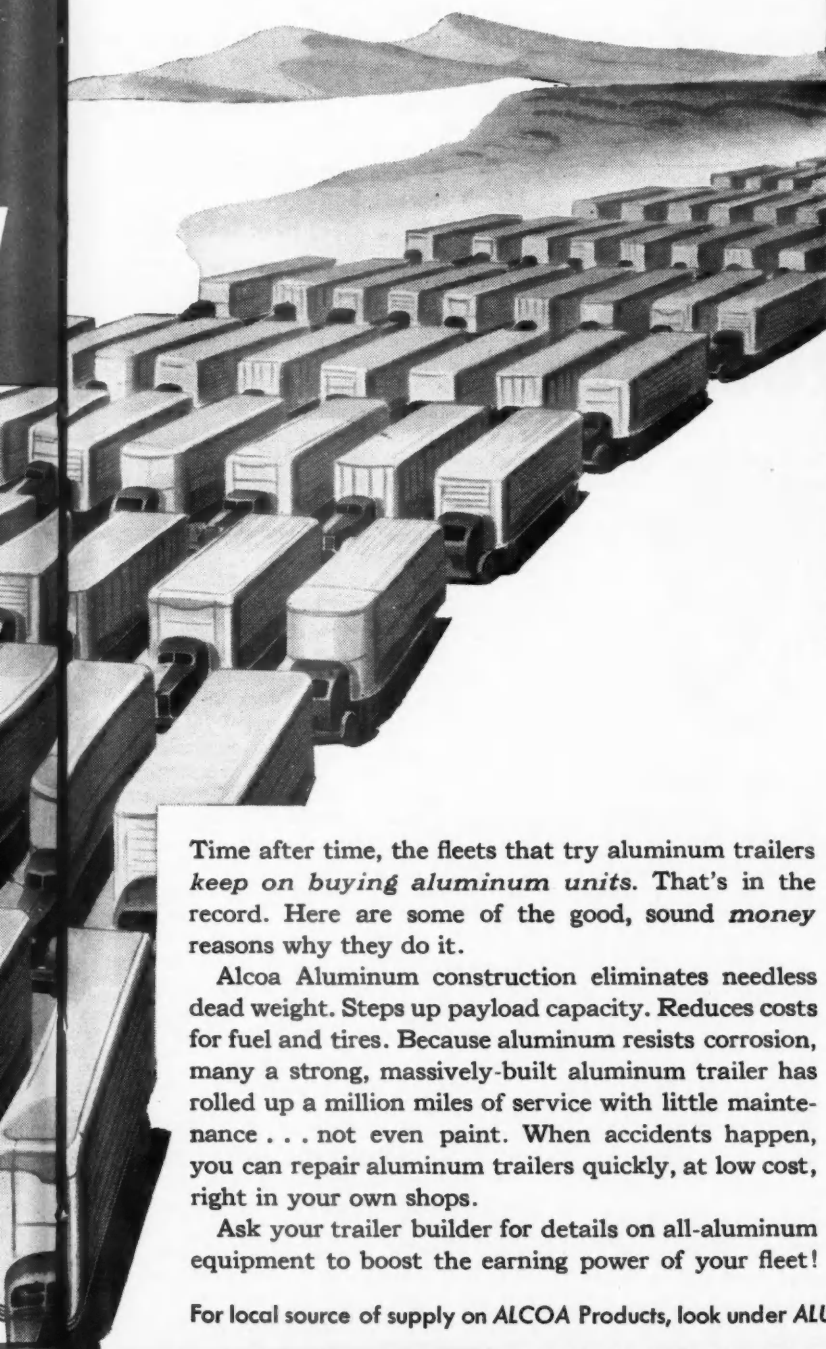
"Million-Milers" of Alcoa

**PICKED BY THE FLEETS
WHO OUGHT TO KNOW!**



EXTRA PAYLOAD IS THE PAYOFF!

Aluminum...



Time after time, the fleets that try aluminum trailers *keep on buying aluminum units*. That's in the record. Here are some of the good, sound *money* reasons why they do it.

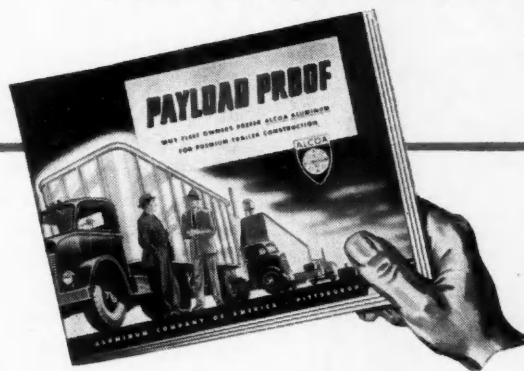
Alcoa Aluminum construction eliminates needless dead weight. Steps up payload capacity. Reduces costs for fuel and tires. Because aluminum resists corrosion, many a strong, massively-built aluminum trailer has rolled up a million miles of service with little maintenance . . . not even paint. When accidents happen, you can repair aluminum trailers quickly, at low cost, right in your own shops.

Ask your trailer builder for details on all-aluminum equipment to boost the earning power of your fleet!

For local source of supply on ALCOA Products, look under ALUMINUM in your Classified Telephone Directory.

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Harry A. Blades
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Consolidated Freightways, Inc.
Eckert Freight Lines
Hayes Freight Lines
The Kroger Corporation
Pacific Intermountain Express
Philadelphia-Pittsburgh Carriers
Reading Transportation Company
Red Star Express Lines
St. Johnsbury Trucking Company
Santa Fe Trail Transportation Co.



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Its 36 pages are filled with useful information, fully illustrated, to help you size up the advantages of Alcoa Aluminum for your equipment. Performance records, weights and dimensions of aluminum trailers, old and new. Send for your free copy of "PAYLOAD PROOF" today. ALUMINUM COMPANY OF AMERICA, 1860D Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA FIRST IN ALUMINUM



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Diamond T

Continued from Page 165

booster are supplied. The lighter R-755 rear axle is also available optionally for 20 in. dual Budd wheels, single rear tires on spoke wheels and for 17-in. tires. Budd wheels can also be had with the 1350 axle but not with the standard R-1000 axle. For the present, 17-in. tires with axle ratios of 5.17 and 5.57 are available only on the optional R-755 axle.

Optional transmissions of synchromesh design are available for the new 322 truck in both 3-speed and 4-speed types. Ample capacity and quieter operation mark the 3-speed transmission while the 4-speed T-98 is also synchromesh and oversize as well.

Brakes are of the Wagner FR design and Bendix Hydrovac booster is available at extra cost. The hand brake is a contracting band mounted at the rear of the transmission. The flexibly mounted single plate clutch is 11 in. in diameter. A two-piece propeller shaft is employed in all wheelbases

with three Spicer needle-bearing universal joints and rubber-mounted double Timken driveshaft bearing.

Frames have pressed steel side rails and alligator-jaw cross members. Springs are semi-elliptic front and rear and all leaves are of alloy steel. Front springs are 2-inches wide and 42-inches long while rear spring are 2½-inches wide and 56½-inches long. A specially designed Diamond T re-circulating heater or a de luxe fresh air heating and ventilating system is available optionally on the new truck.

THIS IS THE ONE FOR YOUR BIG TRUCKS!



2 qt. size (above) for large trucks; 1 gal. size for tank trucks, garages, terminals.

BIG TRUCKS, bought at big cost, need fire extinguishers that can do a big job. Highway authorities recommend larger extinguishers for today's greater hazards.

The 2 quart and 1 gallon PYRENE* Vaporizing Liquid Extinguishers have the fire-smothering power it takes to protect your heavy investment.

They'll handle almost any kind of fire, including flammable liquids. They're safe to use on electrical fires.

You can put them to work in seconds, because they operate on stored air pressure. Their combination nozzle is instantly adjustable for solid stream, fan-shaped spray, or temporary shut-off. Each one is equipped with pressure gauge and sight glass, to tell you at a glance that pressure and fluid are ready for action.

Both sizes are available with either wall or running-board bracket, and with or without built-in hand pump to renew air pressure. Both sizes give you superb fire protection, and the peace of mind that comes with knowing you have it.

Call in your PYRENE jobber today for a recheck of your extinguisher requirements.



*T. M. Reg. U. S. Pat. Off.

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Affiliated with C-O-Two Fire Equipment Co.



Mack Diesel School Hits High in Mechanic Interest

Free diesel training courses offered by Mack Trucks, Inc., have attracted thousands of mechanics, drivers and specialists from the New York area. More than 4000 attended the first session held in Manhattan Center on February 27, and few if any are missing from the ranks now that the program is heading into its sixth week. Enthusiastic students, anticipating diplomas at the end of the 10-week course, are keeping the experts busy—are accepting and absorbing all the technical information that they can provide.

This is but one of a number of such schools being offered by Mack. Boston and Albany courses have already been completed, and similar projects are planned for other cities over the U. S. When the program is completed, Mack expects to have met hundreds of thousands of truckmen, equipping them with practical, authentic information on diesel operation.

The course is arranged with two-hour lecture periods, during which time engineers and specialists discuss assigned phases of diesel operation and maintenance. Usually these men are from the Mack organization in the area. After the lecture, the group is asked to prepare questions which are in turn thrown at the prearranged panel of Mack engineers. At this time queries are answered and hazy points or more difficult problems are thrashed out. The men love it.

It is interesting to note that mimeographed copies of each lecture are distributed each week. A recording is made of all questions and the ensuing discussion, and at the end of the course all students receive complete transcript of all the material that has been presented. This is in addition to manuals, maintenance data and other material that will be of use to the mechanic.

Following is a brief outline of the course, week by week:

1. History of the Diesel and its Economics
 2. How the Mack Diesel Works
 3. The Injection Nozzle and Pump
 4. Timing Injection
 5. Diesel Fuel—Filtering
 6. Lubrication and Lube Oils
 7. Trouble Shooting—Trouble Analysis
 8. Unit Overhaul
 9. Maintenance Practices
 10. Driving Practices
- Logical Diesel Users



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Each volume shows best procedures for doing jobs on engine, chassis, newest type transmissions, brakes, wheel suspension assemblies, wheel aligning.

... tells right figures for fits and adjustments.

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Ask your Thompson Distributor how you can get one or both of these Manuals with your regular day-by-day purchases of Thompson Engine and Chassis Parts.

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You Need!



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VOLUME I—for Passenger Cars.

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SPIRAL BOUND between sturdy covers, the books lie flat and stay open on bench or car fender for handy, on-the-job reference.

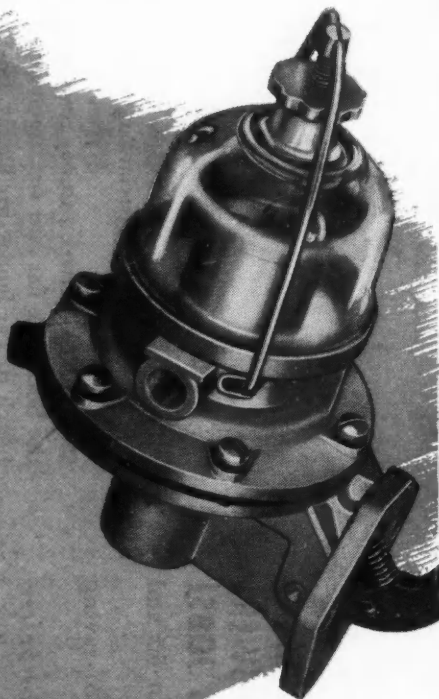
LATEST EDITION now combined in two compact volumes. Covering models for the past seven years!

Going Over **BIG...**



COMPLETE LINE OF **Fuel Pumps** and **KITS**

Give You
Something
to Talk
About



— the strong, selling story
of the exclusive, long-
wearing, trouble-free
NYLO-PRENE® diaphragm.

There's an exact-dimensional, perfect-
fitting replacement — for all popular
makes of cars — in the *complete line* of
P. & D. Fuel Pumps and Kits.



IN ONE WORD
dePenDable

P&D

MANUFACTURING COMPANY, INC.
LONG ISLAND CITY 5, N. Y.

INDUSTRY BRIEFS

Regional sales meetings held by American Brakeblok Division of American Brake Shoe Co. have announced a new dealer merchandising program.

It is based on the theme, "Spend a Minute—Save a Life." It is aimed at helping American Brakeblok dealers point out to the motoring public the importance of safe brakes. Complete sales and promotion materials have been prepared and will be in the jobbers' hands immediately.

Net sales of the Minnesota Mining & Mfg. Co. for 1949 reached an all-time high, according to the firm's annual report. The figure was \$114,925,274, an increase of more than six million over the previous record of \$108,246,410 set in 1948. Net income after taxes amounted to \$15,398,176, up about two million over last year's profit of \$13,234,756.

A new truck tire designed to deliver substantially greater mileage and at the same time give smoother wear has been announced by Goodyear Tire & Rubber Co.

Termed the New Hi-Miler Rib, the tire features a new tread which has been made flatter and with more rubber. The carcass is also of tougher compounds, believed considerably more resistant to heat and high speeds. A new continuous rib design has proved itself during a long series of road tests.

The doors of Mechanics Building, Boston, will be thrown open April 25 for the biggest Automotive Parts and Equipment Show ever held in New England. More than 300 manufacturers will display the latest equipment and devices in booths which total 475 in number. The four-day show is the focal point for welding together factory representatives, jobbers, automotive associations, Booster Clubs, and all other members of the industry in this large undertaking which has for its central theme the "Get It From Your Jobber" idea.

Setting a new all-time high of 478,000 in attendance, the 42nd annual Chicago Automobile Show, held from Feb. 18 to 26, inclusive, at the International Amphitheater, proved an epoch-making event. Sales at the show and in dealer establishments during its nine-day run were estimated at 10,000 cars and trucks.



WE'RE DELIVERING THEM NOW! FRUEHAUF'S NEW CORRUGATED*

ALL STEEL "Unit-Built" VAN BODIES



This 12-ft. straight-frame Corrugated Van Body—complete with tailgate, painted and mounted on your chassis—delivers for

\$614⁰⁰

(Freight and taxes extra)

***Complete-Mounted and Painted—** AS LOW AS **\$614⁰⁰**
FREIGHT & TAXES EXTRA

Now Fruehauf brings you its handsome, brand new Corrugated Van Bodies—with the same extra-sturdy, rugged-built construction as Fruehauf's famous corrugated-steel Trailers! All steel and "Unit-Built," they're welded from stem to stern into one single, rigid, trouble-free unit—with nothing to work loose, warp, splinter or rattle.

Fruehauf's New Corrugated Van Bodies are available in 12-14-16 ft. lengths—in popular straight-frame or wheelhousing models. And at extremely popular prices!

World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER COMPANY

DETROIT 32 LOS ANGELES 58

In Canada: Weston, Ont.

Fruehauf's famous Corrugated Construction for GREATER STRENGTH!

Every corrugated channel (spaced 8" apart) becomes a load-supporting member. Lighter-yet-stronger corrugated construction contributes to long, trouble-free life of Fruehauf's rugged "Unit-Built" Van Bodies.



FRUEHAUF
Truck Bodies

**Ready for the road
in a matter of hours**

**Custom Quality at
production line prices**

Federal Reorganization Plans May Affect Highway Transportation

Two of the 21 plans to reorganize the Federal Government, submitted to Congress recently by President Truman, will have a far-reaching effect on highway transportation if they are allowed to become law.

Plan No. 7 reorganizes the Interstate Commerce Commission to the extent of transferring all executive and administrative functions of the ICC to the Chairman

of that Commission, and places the selection of the chairman in the hands of the President. The present regulatory and quasi-judicial functions of the ICC, however, would be left undisturbed at this time. The result would be to have ICC much more responsive to changes in Administration policy.

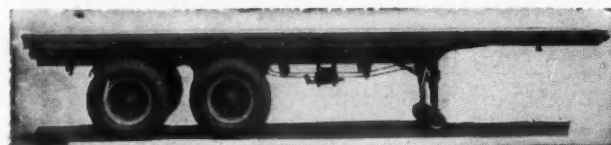
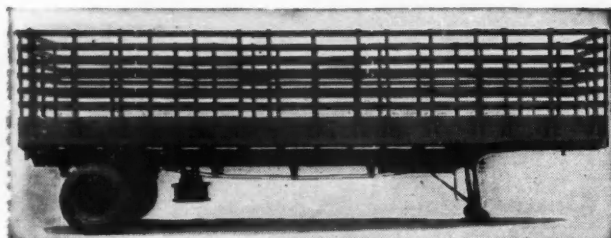
Another proposal (Reorganization Plan No. 21 of 1950), in connection with the

abolition of the Maritime Commission and the transfer of its functions to the Department of Commerce, would set up a new office titled the "Under Secretary of Commerce for Transportation."

It is now becoming apparent that the eventual plan of the Administration is to centralize all Government transportation agencies in the Department of Commerce. Another "Hoover" Commission proposal which the President is expected to submit at some later date is one that will transfer to Commerce the motor vehicle safety regulatory functions of the ICC.

Under the terms of the Reorganization Act of 1949 these plans now submitted by the President will become law unless they are "vetoed" by a majority vote of either branch of Congress within 60 days.

TEC TRAILERS

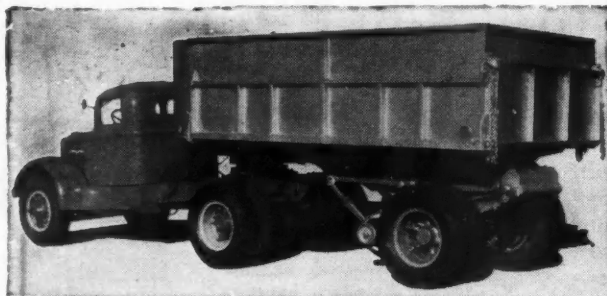


VANS STAKES FLATS

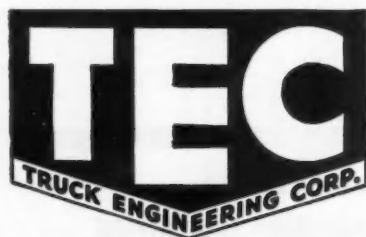
Single and
Tandem Axle.
All Sizes and
Models

DUMP UNITS

For Bulk Hauling
of Coal, Sand,
Gravel and
Other Materials



TEC TRAILERS are designed to haul maximum payload with minimum dead weight, and provide long life with low maintenance cost. Prompt delivery can be made on standard models.



Some Distributor Territory Available

TRUCK ENGINEERING CORP.
CLEVELAND 2, OHIO

RANDOLPH'S RIDDLES

Busman's Problem

What is the number of buses that will stop at a given corner in an hour, if five buses, running on the same schedule, stop there every 12 minutes?

Answer on Page 175

Automotive Double Talk

What part of a truck has the name of a

1. Woman's shoe
2. Nest of eggs
3. Artillery unit
4. Movie enthusiast
5. Tunnel
6. State head
7. Fountainhead
8. Railroad station
9. Old horse
10. Breeding horse

Answer on Page 175

Increased Tanker Capacity



Three groups of engineers from White, Standard Oil and Pennsylvania Furnace & Iron developed this truck. With the short wheelbase White 3000, the over-all length was decreased by 2½ ft and the carrying capacity was increased by 1000 gal. Overhang from the rear wheels was also reduced by three ft. Featured is new location of hose and reel on the side to speed delivery.

NTTC Brief Filed with ICC

National Tank Truck Carriers, Inc., has filed a brief before the Interstate Commerce Commission in the railroad rate case on petroleum products in the Southeast (I&S 5710).

NTTC's argument that the suspended rates should be disapproved was based on two contentions: (1) "The suspended rates, irrespective of cost factors, are contrary to the national transportation policy," and (2) "The carriers have not established that the suspended rates are compensatory within the meaning of the act."

The brief calls the attention of the Commission to several previous cases before the ICC and the Supreme Court in which the principles of preserving the inherent advantages of each mode of transportation, equal regulation of all modes, and prevention of unfair and destructive competitive practices, were affirmed as being necessary to the proper administration of the national transportation policy.

West Coast M.E.W.A. Meet

Wholesalers from 11 Western states participating in the Pacific Automotive Show at San Francisco recently attended in force the M.E.W.A. Western States Business Conference on Feb. 15. Also a large number of manufacturers were present, bringing the total attendance to approximately 400.

41 Billion Needed for Roads

The total cost of correcting present deficiencies on the highways, roads and streets of the nation is estimated at \$41,144,630,000, according to the Joint Committee on the Economic Report of the U. S. Congress. The committee's report entitled "Highways in the Nation's Economy" is based on responses to inquiries addressed last July by Sen. Joseph C. O'Mahoney, Chairman of the committee, to the governors and highway authorities of all of the states, and was assembled by the committee staff in cooperation with the Bureau of Public Roads.

Of the total \$41 billion, the largest single amount, \$23,044,630,320, is estimated as needed for the state highway systems and

their urban extensions, with \$10,400,000,000 reported as needed on local rural roads, and \$7,700,000,000 estimated as needed for city and village streets.

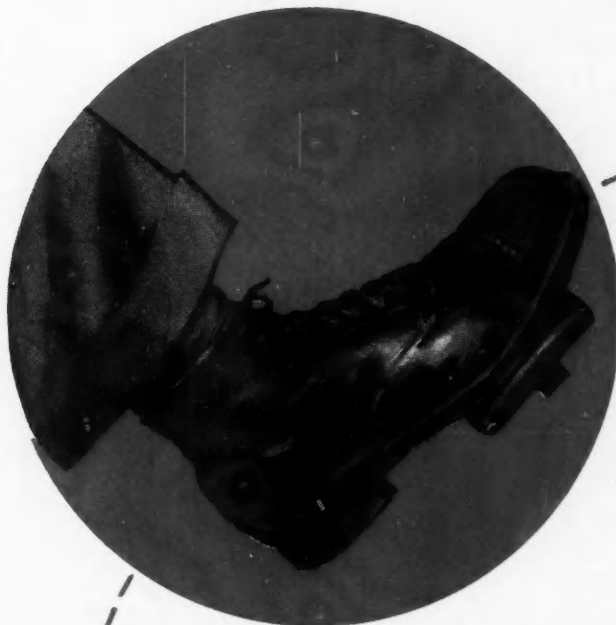
Automotive Double Talk ANSWERS

- | | |
|------------|-------------|
| 1. Pump | 6. Governor |
| 2. Clutch | 7. Spring |
| 3. Battery | 8. Terminal |
| 4. Fan | (battery) |
| 5. Tube | 9. Plug |
| | 10. Stud |

Answer to "Busman's Problem"

21 Buses

EXPLANATION: The buses are running on the same schedule, so they are evenly spaced with regard to time. The interval between each of five buses in a 12-minute period is, therefore, 3 minutes (BUS interval BUS interval BUS interval BUS interval BUS). There are 20 such intervals in an hour, and, since they all lie between buses, there must be 21 buses.



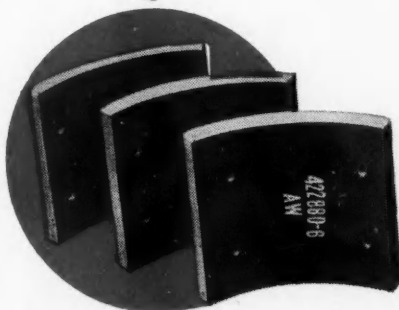
Put Your Foot Down on Costs

Thermoid Heavy Duty Brake Blocks provide maximum "safe stopping" at minimum cost per mile.

They stand up under high operating temperatures. Even when worn thin, they give full brake action. They won't score or wear brake drums.

Thermoid Heavy Duty Brake Blocks work smoothly, quietly, reliably. Wet or slushy weather won't affect their efficiency.

More and more leading fleets are relying on Thermoid Heavy Duty Brake Blocks for sure, safe stopping that ups fleet efficiency. Ask your Thermoid Distributor or Fleet Specialist to show you how you too can reduce operating costs.



Thermoid

Brake Linings • Fan Belts • Radiator Hose
• Hydraulic Brake Parts and Fluid • Car
Mats • Clutch Facings • Thermoid Pre-
cision Process Equipment

Thermoid Company • Trenton, N. J.



"The front office said I'd find that no good husband of mine out here!"

C.O.D. System Nets Quick Cash to



Typical vehicles of M. R. & R. Trucking Co.'s fleet

Bank accounts at various warehouse points and two forms expedite handling of c.o.d.'s

A FAST, SIMPLE method of handling cash on delivery accounts has been installed by the MR & R Trucking Co., according to Carl E. Bjorkland, vice-president of the company and manager of the interchange sub-station, Panama City, Florida.

MR & R is a comparatively new line servicing all points in West Florida to Jacksonville. Headquarters are in Crestview, Florida, with interchange sub-stations in Panama City and Pensacola. The line connects with other trucking lines throughout the southern states, with a north to south movement from Memphis, Tenn., to the Pensacola station.

Bank at Warehouse Points

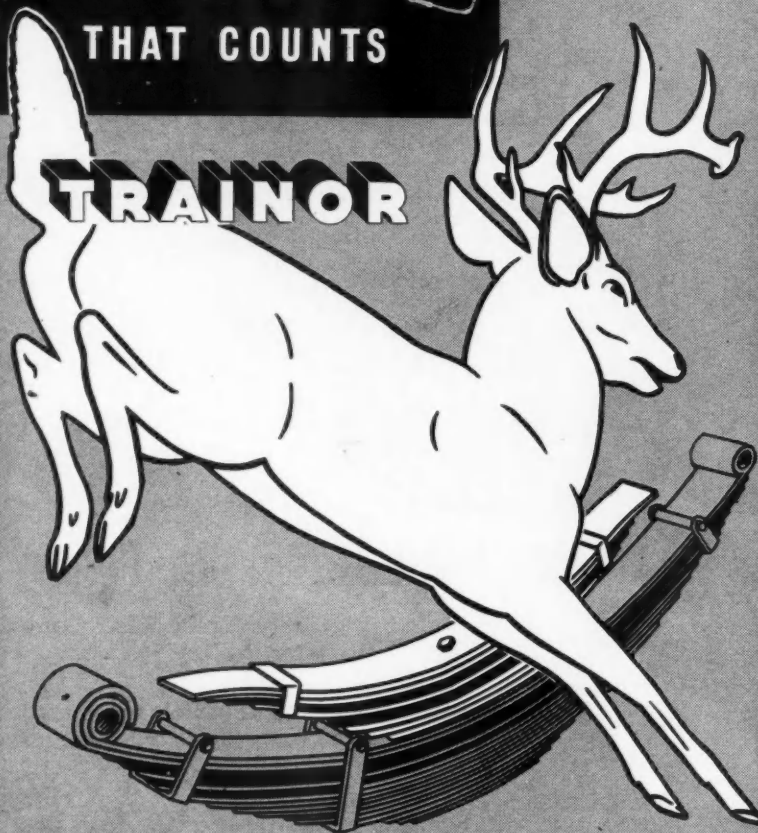
THE streamlined cash-on-delivery system used by MR & R is based on establishing checking accounts at local banks in every town in which the company has a warehouse; namely, Panama City, Crestview, Pensacola, Tallahassee and Jacksonville. Agents at these warehouses have authority to draw on their c. o. d. accounts for payment to shipper just as soon as the merchandise has been delivered.

Collections for merchandise delivered during the course of one day are usually held over and deposited early the following morning. Checks to the shippers are then made out immediately and mailed before noon.



"I was formerly loading superintendent for the Gotham Bus Company."

IT'S THE *EXTRA* SPRING
THAT COUNTS



The deer is known for its spring agility even when travelling over the roughest terrain. TRAINOR Helper Springs are known for adding spring ability to all trucks travelling rough highways. Engineered for simple installation, TRAINOR

Helper Springs increase payload capacity, reduce road shock and prove more economical in cost per mile. TRAINOR Helper Springs and Build-Up Kits are available at leading automotive wholesalers everywhere.

BRANCHES

INDIANAPOLIS SPRING CORP.
830 W. Washington St., Indianapolis, Ind.
CINCINNATI TRAINOR SPRING CO.
2428 Spring Grove Ave., Cincinnati, Ohio
COLUMBUS TRAINOR SPRING CO.
Columbus, Ohio, 339 Cleveland Ave.

**TRAINOR NATIONAL
SPRING COMPANY**
NEWCASTLE, INDIANA

Small Shippers

By Ted Bryan

This sends remittance on the way approximately 24 hours after collection. Such speed is a boon to small shippers with limited capital.

Connecting Line Gets Card

WHEN the agent makes out a c. o. d. check to the shipper he also fills out a form on a government postal card to the connecting line which delivered the shipment to his line. This card contains all pertinent information about the shipment; delivery time, date, and to whom the payment was made.

This system does away with many tracers and the general mix-up that can happen when more than one connecting lines have handled shipment.

Agreements with connecting lines provide for payment of accounts to them on a weekly or monthly prorate basis.

Although the MR & R c. o. d. system rates less than 2 cents per shipment over other c. o. d. systems in use, it is still considered inexpensive by MR & R trucking officials. In many instances, they point out, it does not cost that much, as c. o. d. shipments often come in groups from the same shipper and can be covered with one transmittal.

After a trial over a period of years, the officials are quite satisfied with results. They further point out that their system also saves time by eliminating detailed correspondence and expensive tracer checking.

A double check on all transactions is made when periodic notations of shipments, deliveries and payments are made to headquarters' office in Crestview.

OBSERVATION

A gentleman never blows his knows

M. R. & R. TRUCKING CO.
Crestview, Fla.
12/8/49

REMITTANCE:
C. O. D. Check No. 1566
Amount \$327.66
Payable to John Black & Co., Inc.
Address: John Black & Co., Inc.
12/8/49

M. R. & R. TRUCKING CO. Ch. No. 1 1208
Crestview, Florida

WATERS 684571

BILLING POINT: FERNANDINA, FLORIDA DATE: December 14/49

CONSIGNEE: John Black & Co.,
FERNANDINA, FLORIDA

SHIPPER: John Black & Co.,
MIDDLETOWN, ALABAMA


ADDRESS: The Original Truck Line, 1111 S. 78TH ST.,
12/14/49

No. From	DESCRIPTION OF ARTICLE AND QUANTITY	QUANTITY	RATE	PERMANENT	COLLECT
12	Goods Transmitted	1165	66	ONE	\$ 1.77
					. 28
					18.00
					. 66
					TOTAL \$25.66

COPIES: PRELIMINARY, RECEIVED, ADVANCE, RETURNED


Signature: John Black & Co., Inc. Date: Dec 15

ABOVE—Post card, with rubber-stamped form, invoice, at right, plus separate bank accounts comprise the c.o.d. system



Plenty to SHOW and CROW about!

- CABLES
- FLUIDS
- PARTS



- KITS
- TOOLS
- CYLINDERS

The BRAKE PARTS Line

Specialty Designed—Fully Patented
WHEEL CYLINDER CUP
For CHRYSLER PRODUCTS
Patent No. 2,465,175



It's an EIS exclusive! A cup that stands up in service . . . and costs less! . . . Features strong flexible ribs which maintain the proper amount of wall tension. From every angle it's the most economical unit for Chrysler replacement. Use R933 or the complete CA-P KIT.

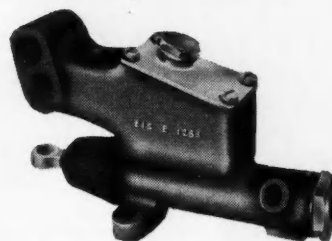


**ANOTHER
EIS EXCLUSIVE
FREE**

CUP INSERTER

To make life easier for the mechanic, EIS furnishes a Special Inserter FREE, with 4 CA-P Kits.

Precision
MASTER & WHEEL CYLINDERS



Careful inspection between operations and final assembly guarantees their precision and ease of installation. Thus you can sell or install EIS Cylinders with full confidence in their "S-TOP Quality" Performance . . . that they will more than meet their responsibility for SAFETY.



USE EIS SUPER 40 BRAKE FLUID! BECAUSE IT'S BETTER

Ask your Jobber or write us direct

EIS AUTOMOTIVE CORP., Middletown, Conn.



INTRODUCING . . .

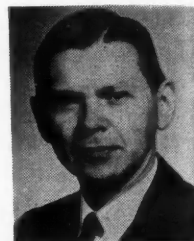
...GEORGE LAMSON, named manager, Automotive Replacement Sales Division, Thermoid Co.

...SIDNEY E. MILLER, elevated to the office of vice president in charge of engineering, American Bosch Corp., Springfield, Mass.

...GENERAL THOMAS B. WILSON, elected a member of the Board of Directors of ACF-Brill Motors Co.

Appointment of CLARENCE H. ENDRESS as chief engineer of Willard Storage Battery Co. has been announced by C. E. Murray, executive vice-president.

...EDWIN W. STOLZENBERG, as sales promotion manager of The Trailmobile Company.



...E. G. EWELL, vice-president of Mack-International Motor Truck Corp., named general sales manager of the company's Eastern, Atlantic and Southern Sales Divisions.

Several changes in the Associated Lines Sales division of The B. F. Goodrich Co. have been announced by M. G. Huntington, division general manager. H. G. CULBERTSON, formerly manager of the eastern geographic division, retired, and his duties have been taken over by H. M. ROCKWELL in addition to his previous responsibilities.

Three new district field managers are appointed, FRED J. SELL, St. Louis; ROBERT M. FRASHER, Memphis, and L. V. PATTON, Denver, a newly created territory. E. H. MUELLER, who had been district field manager in Atlanta, Georgia, is transferred to Washington, D. C., in a similar post and is succeeded by R. W. COTTERMAN, who had been district field manager in Washington.

...JAMES N. BLISSELL, who has joined Lee Storage Co., Toledo, Ohio, to handle advertising and sales promotion.



...LARRY J. BRENNAN, appointed sales manager of the Carry-All Truck Body Div. of Morrison Steel Products, Inc., Buffalo, N. Y.

...ROBERT WARDROP, appointed assistant to the vice-president for Pittsburgh Plate Glass Co.

...RICHARD E. LEONARD, of St. Louis, appointed district sales representative for the Prest-O-Lite Battery Co.

...JAMES E. BORDEAUX, as secretary of the trucking industry's National Classification Board.

(TURN TO PAGE 180, PLEASE)

NEW SPECIFICATIONS




**FLASHING TRUCK
DIRECTIONAL
SIGNALS**



AMBER LAMPS (front)




RED LAMPS (rear)

for use
on any
truck
in any
state

contact
YANKEE
today!

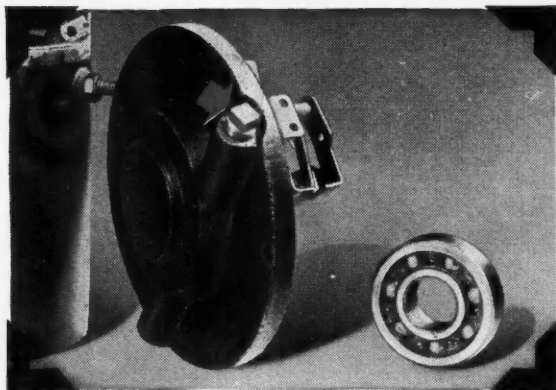
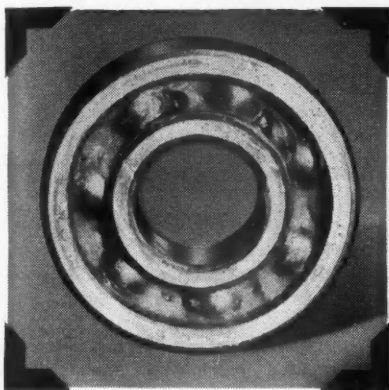
Yankee "920"—the complete 4-lamp set with flasher switch and wiring—is the last word in truck directional signals... meets the new S.A.E. specifications for all Class A vehicles, those over 80" in width. New type 4 1/2-inch lamps are finished in black baked enamel over corrosion-resistant "bonderized" steel. The "920" is a money item—cash in on it.

YANKEE METAL PRODUCTS CORP., NORWALK, CONN.

STANDARD ENGINEER'S REPORT

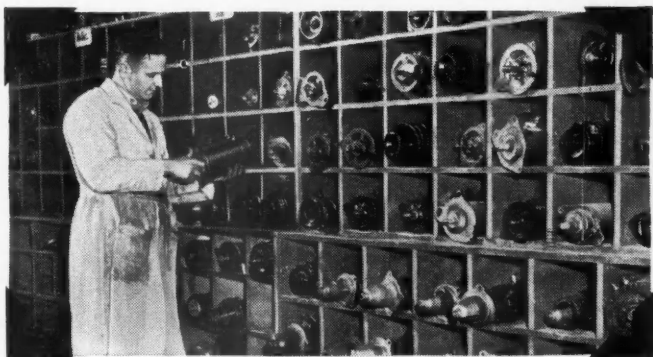
DATA	
LUBRICANT	<i>Calol O.H.T. Grease</i>
UNIT	<i>Automotive generator bearing</i>
LUBRICATOR	<i>Sealed at installation</i>
CONDITIONS	<i>Heavy-duty diesel truck engine</i>
MILEAGE	<i>70,000</i>
FIRM	<i>H. G. Makelim Co., San Francisco-Oakland</i>

Sealed generator bearing still perfect after 70,000 miles!



ONE APPLICATION OF CALOL O.H.T. GREASE, sealed in the bearings when this diesel-engine generator was assembled by H. G. Makelim Co., prevented any bearing wear in 70,000 miles of heavy-duty truck service. Generator was disassembled at this time only because it needed new brushes, and for general inspection. Note a permanent plug replaces usual grease fitting.

70,000 MILES OF SERVICE did not affect or use up any of the CALOL O.H.T. Grease in the bearings. In special tests, one filling has lubricated bus-generator bearings perfectly for more than 150,000 miles.

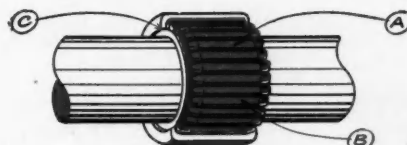


"WITH CALOL O.H.T. GREASE SEALED IN BEARINGS, we recommend installing generators without grease fittings," says Frank Balzarini, H. G. Makelim Co. Foreman. "CALOL O.H.T. eliminates need for greasing between overhauls. And eliminating fittings stops over-greasing—a big cause of wear and trouble."

REMARKS: The H. G. Makelim Magneto Repair Company, San Francisco and Oakland, one of the West's oldest automotive-electrical and carburetor repair firms, specializes in servicing equipment in the toughest automotive service—truck, bus and car fleets.

Besides generator bearings in this service, CALOL O.H.T. Grease is recommended for all types of bearings in service under extremely severe operating conditions.

How CALOL O. H. T. Grease protects bearings in severest operating conditions



Used in any type of bearing under any operating condition, high temperature-low speed, high speeds to 10,000 rpm, temperatures from minus 10° F. to 400° F., CALOL O.H.T. Grease will last indefinitely.

- A. Contains special oxidation inhibitor—prevents rusting, corrosion, hardening of grease at any time.
- B. Resists high temperatures—eliminates coking.
- C. Provides excellent seal against water... lubricates efficiently in slight moisture.



FOR MORE INFORMATION
If you have a lubrication or fuel problem your Standard Fuel and Lubricant Engineer or Representative will give expert help; or write Standard of California, 225 Bush St., San Francisco 20.

Trademark "CALOL" Reg. U. S. Pat. Off.

STANDARD OIL COMPANY OF CALIFORNIA • San Francisco
THE CALIFORNIA OIL COMPANY • Barber, N. J., Chicago

STANDARD OIL COMPANY OF TEXAS • El Paso, Texas
THE CALIFORNIA COMPANY • Denver, Colorado

Introducing

Continued from Page 178

... RICHARD R. TETTELBACH, as assistant advertising and sales promotion manager of The Cleveland Chain & Mfg. Co., Cleveland, Ohio.

... H. D. Dawson, assistant general manager of Delco-Remy Division of General Motors since 1947, has been named general manager of the division, succeeding O. V. Badgley, whose retirement was effective Jan. 1.

... D. M. BORGES as chief engineer Pesco Products Division of the Borg-Warner Corp.

... EDGAR E. GEORGE, district sales representative for the Baker Industrial Truck Division of The Baker-Raulang Co. with headquarters in High Point, N. C.

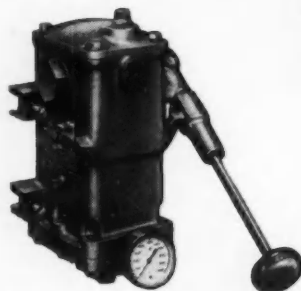
... GEORGE F. OWENS, who has been appointed district sales manager for the Champion Spark Plug Co. in the Midwest.

Appointment of HIRSIG-FRAZIER Co., Inc., Dallas, as direct factory sales representatives for tire chains, tractor chains and tow chains manufactured by The Cleveland Chain & Mfg. Co., was announced recently by DAVID J. GEMMELL, Cleveland Chain vice-president and director of sales.

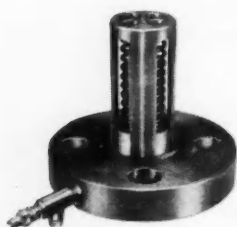
... PAUL HUBER, who has been named research engineer and H. G. KAMRATH, liquid filter engineer, by the Fram Corp. of Providence, R. I.

... WILLIAM D. JAMESON, new pump sales manager for the Stamford Division of The Yale & Towne Manufacturing Co.

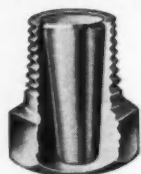
**CARELESSLY
Tossed**



The hydraulic operator which opens the valves.



Hydraulic Internal Safety Valves are installed inside the tank and are normally closed under spring tension.



The tiny fusible plug shown above is installed at strategic points in the hydraulic line which actuates the Safety Valves.



A carelessly tossed cigarette or match, those two public enemies so often responsible for terrible forest fires, are quite as often responsible for fires and explosions when petroleum truck tanks are being unloaded.

The Shand & Jurs internal hydraulic valve system, the components of which are here illustrated, have been used by many marketers for years on gasoline trucks, and are now being widely applied to L.P.G. equipment. Their purpose is to instantly stop the flow of fuel automatically whenever fire accompanies unloading or a highway accident.

The little fusible plug, installed in tees in the hydraulic lines which actuate the internal safety valves, melts at 165°F. and automatically releases the hydraulic pressure, which closes all valves which may be discharging.

SHAND & JURS CO.

BERKELEY, CALIFORNIA

NEW YORK CHICAGO HOUSTON
LOS ANGELES SEATTLE

SHAND & JURS



... JOHN W. DIRBLE, named manager of the Chicago branch of Reo Motors, Inc.

... W. J. FREDERICK and G. F. ZELLER, new managers for the Mack Truck Company's direct factory branches at Newark and New Brunswick, N. J.

... HUGH L. HAYWARD, advertising and sales promotion manager for Fisk-Gillette division of U. S. Rubber Co.

... ALEXANDER VILLIERS, national sales manager of Guaranteed Parts Co., Inc., Seneca Falls, N. Y.

... T. H. CABLE of New York who has joined the sales department of Koppers Co., Inc.

... CLIFF S. GARSTANG, appointed general sales manager of the Barrett Equipment Co., St. Louis.



A new truck representative has joined the field organization of The Studebaker Corp. LAWRENCE L. POHLMAN has been assigned to Studebaker regional headquarters in St. Louis while Luther Pohl's base is the company's regional office in Cleveland.

... J. C. MARSHALL who has been named manager, retail merchandising, for the U. S. Tire Division of U. S. Rubber Co.

... P. H. McMANUS has been appointed general sales manager of Templeton, Kenly & Co., Chicago, Ill., manufacturers of Simplex Jacks.

... J. A. CORTRIGHT, general sales manager for the Clayton Mfg. Co. of El Monte, Calif., has announced the appointment of

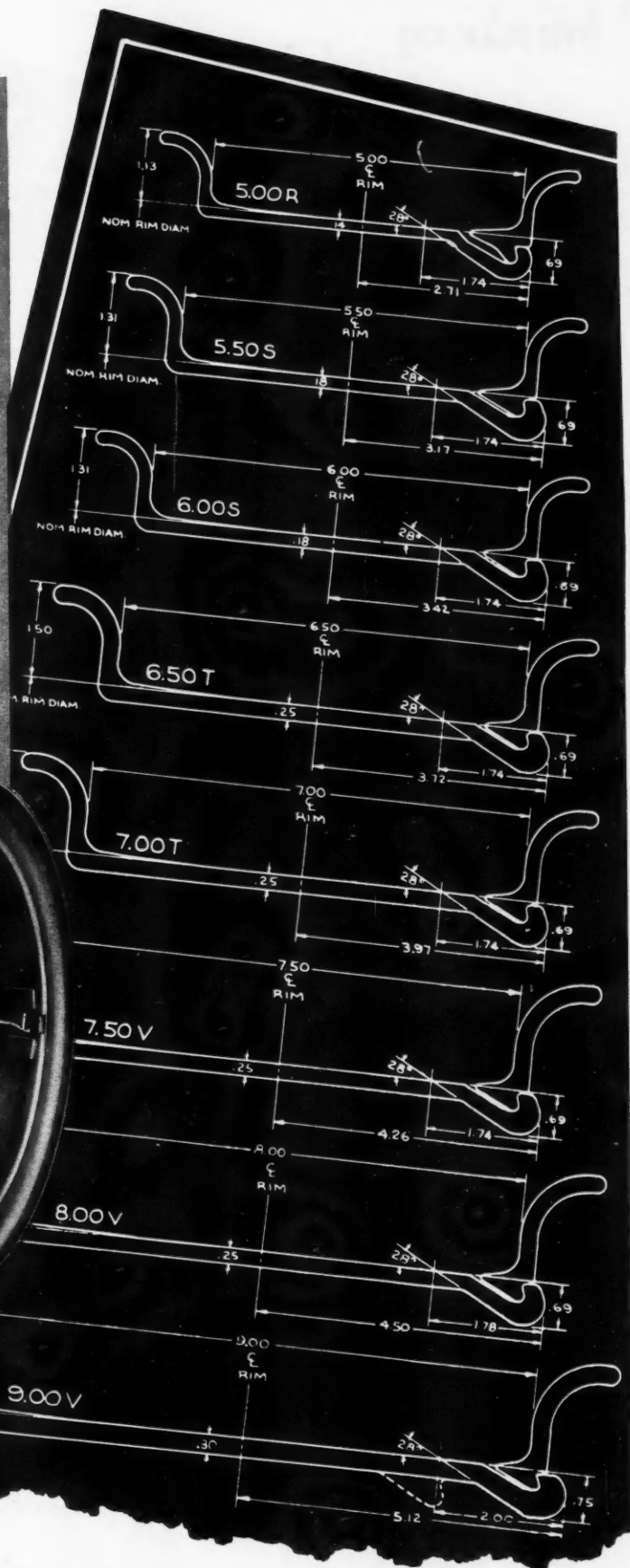
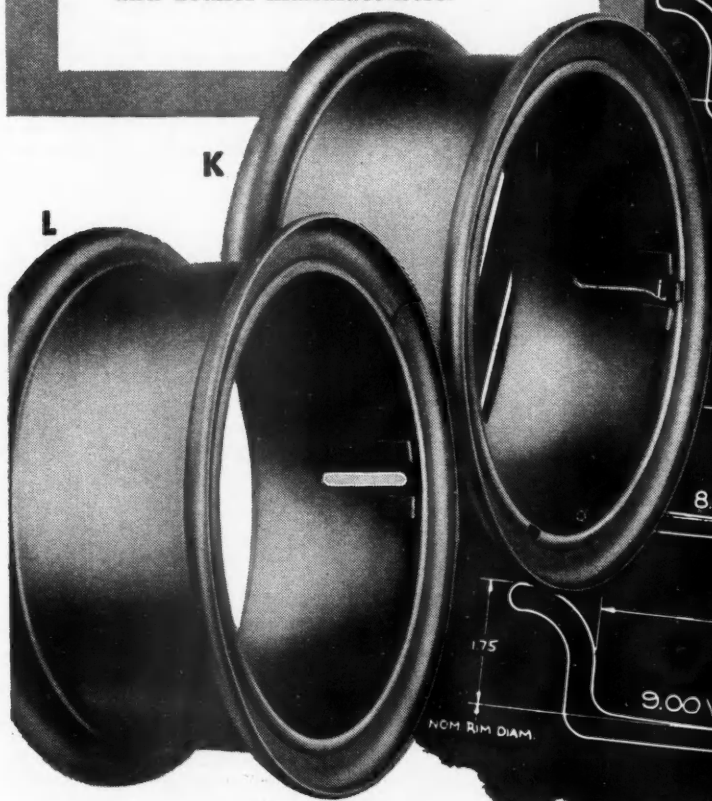
(TURN TO PAGE 182, PLEASE)

Standards are established
by usage

THE 70 AND 5 GOODYEAR WIDE-BASE RIMS

Over six million now in service tell
the story of a Rim Standard ap-
proved by the Tire & Rim Associ-
ation, Inc.

The *only* wide-base rims of uniform
design in all standard sizes and
generally accepted by Truck, Bus
and Trailer manufacturers.



Two types in all standard sizes
Minimum weight and adequate strength
assure maximum tire mileage

GOOD YEAR RIMS

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

Introducing

Continued from Page 180

William O. Merritt as sales promotion manager. Merritt, who assumed his new post the first of this year, served for nine years as public relations, sales promotion and training director for the Bear Manufacturing Co. of Rock Island, Ill.

... ORDWAY F. PIEL, district representative for the Auto-Lite Battery Corp. in Pittsburgh, Pa., and ALBERT GUNDERSON, Westchester County representative in New York.

... ROGER M. KYES, assistant general manager for GMC Truck & Coach Div. of General Motors Corp.

... E. W. ALLISON, who has been elected secretary-treasurer of Detrex Corp. in Detroit, Mich.

... JESSE M. SUGGS, district manager for K-D Lamp Co. with headquarters in Memphis.

... LOUIS R. RIPLEY, who has been elected president of the Heli-Coil Corp., Long Island City, N. Y.

... T. A. KREUSER, of Bendix Aviation Corp., Products Division, in South Bend, Ind., re-elected president of the Automotive Electric Association.

... HARVEY C. FRUEHAUF, of Fruehauf Trailer Co., Detroit, has been elected a director of Georgia-Pacific Plywood & Lumber Co. of New York City.

... G. A. FREDERICKS, supervisor of all field accounting for GMC Truck & Coach Division of General Motors Corp.

... T. H. McNEILL of Houston, Texas, recently named sales representative for the Automotive Chemicals Division of E. F. Drew & Co., Inc., of New York.

... In charge of petroleum and allied product sales for Gulf Oil Corp.: W. R. HUBER, general manager, retail marketing; D. P. CLARK, general manager, direct marketing; W. E. DERMODY, advertising manager; C. E. SKINNER, commercial research engineer; G. T. RYAN, operations manager.

... T. TYLER SWEENEY, who has been elected a director of Seiberling Rubber Co.

... WILLIAM A. HAYS, appointed manager of the New Orleans district of the Replacement Tire Sales Division of the B. F. Goodrich Co., succeeding DONALD A. LACARD, who has been transferred to Atlanta, Ga.

... RAY L. MORRISON, executive vice president of the DeVilbiss Co., Toledo, Ohio.

... FRED'K C. SHAFER, elected president and chairman of the board of directors of the Imperial Brass Mfg. Co., Chicago.

... H. E. STEINBRINK, Eastern regional sales manager of the Highway Trailer Co., Edgerton, Wis.



... R. P. (BUCK) WEAVER, appointed Detroit branch manager of the Highway Trailer Co.

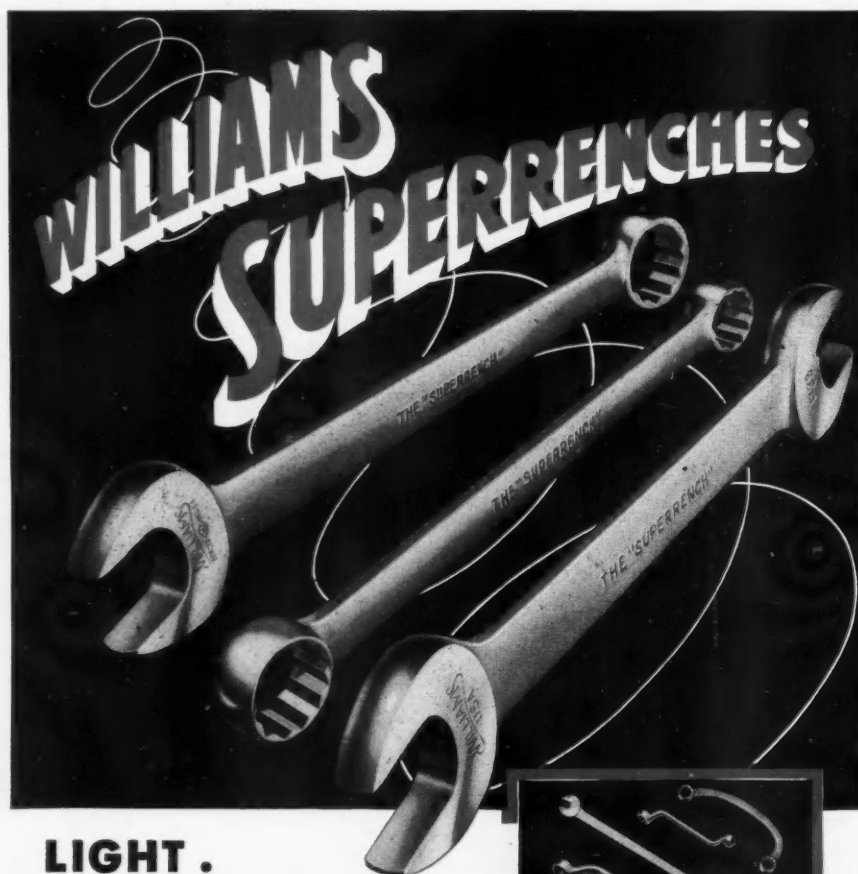
... E. W. LUTZ, named credit manager of the General Tire & Rubber Co.

... RALPH D. YATES, named chief of the American Trucking Associations' Government Traffic Section. He succeeds E. F. MacMILLAN who has resigned to open an office as a transportation consultant.

... GEORGE F. JENKINS, appointed sales manager of the National Screw and Mfg. Co., Cleveland, Ohio.

... O. B. CASEY, national service manager of the Detroit Automotive Products Corp., formerly the Thornton Tandem Co.

(TURN TO PAGE 184, PLEASE)



**LIGHT .
TOUGH . .
STRONG . . .**

FORGED FROM SELECTED ALLOY STEEL

Williams "Superrenches" provide great strength with minimum bulk and weight. Drop-forged from selected alloy steel and heat-treated, they are available in a wide range of sizes and many patterns. Chrome-plated over nickel with highly polished heads. Write for Williams Catalog A-50.



OPEN END, BOX, ADJUSTABLE & BATCHET WRENCHES, DETACHABLE SOCKETS & SETS, IMPACT SOCKETS, TOOL HOLDERS, LATHE DOGS, "C" CLAMPS, CHAIN PIPE TONGS & VISES, FLANGE JACKS, PUSHERS, SCREWDRIVERS, PUNCHES & CHISELS, SOFT FACED "HUIPLAX" TYPED HAMMERS, HOIST HOOKS, EYE BOLTS, THUMB SCREWS AND NUTS, BODY AND FENDER REPAIR TOOLS.

J. N. WILLIAMS & CO., AUTOMOTIVE DIVISION, BUFFALO 7, N. Y.

Used and Recommended
by over 70% of all
Truck and Bus Manufacturers

LOWEST

HIGHEST PERFORMANCE

MAINTENANCE COST



REPLACE WITH ZOLLNER THE "ENGINEER APPROVED" PISTON

You are safe and sure when you follow the recommendation of your engine designers. Specifically tailored to individual engine specifications, Zollner Pistons are the expert product of hand-in-hand engineering development with engine builders. You get utmost performance and economy of operation when you recondition with Zollner "Engineer Approved" Pistons. Today, as for many years, over 70% of all makes of trucks and buses are Zollner equipped. Like the vast majority of fleet owners, your experience records will prove Zollner is always the "best buy" in pistons — the choice of automotive engineers.

ZOLLNER

HEAVY DUTY PISTON EQUIPMENT

ORIGINAL
EQUIPMENT
IN AMERICA'S
FINEST
MOTORS

ZOLLNER MACHINE WORKS

FORT WAYNE, INDIANA

Introducing

Continued from Page 182

... J. T. SULLIVAN, motor truck district manager in Portland, Ore., for the International Harvester Co.

... W. L. TOMLINSON, promoted to manager of automotive glass sales for Pittsburgh Plate Glass Co.

... FRANK P. HERMAN, elected a member of the board of directors of Purolator Products, Inc.

... PAUL OXLEY, K-D district sales manager for Alabama, Georgia and Florida. PAUL KERN, K-D district manager for half of Ohio and parts of Indiana, Kentucky and West Virginia.

... J. M. SPANGLER, appointed president of the National Carbon Div. of the Union Carbide and Carbon Corp. He was the former director, vice-president and general manager of the Div.

... B. C. KOENITZER, named manager of the Lansing, Mich., terminal of the Geo. F. Alger Co.

... MURRAY LITTLEFIELD, appointed New England district manager of the William & Harvey Rowland, Inc., Philadelphia.

... WALTER M. CAGE, named sales engineer, with headquarters in Cleveland, Ohio, for the Allen Electric and Equipment Co.

... PHILIP NORTON, president of the Internal Combustion Engine Institute.

... LEE H. LUNDY, named branch manager for the White Motor Co., in Philadelphia. Mr. Lundy succeeds E. R. KINNEBREW, who is taking over the White distributorship in Memphis, Tenn.



... A. RAND BALDWIN, representing E. F. Drew & Co. in Southern California, Arizona and Nevada. GEORGE B. HOWE, Drew representative in Northern California and parts of Nevada.

... CLARENCE G. WOOD, elected a member of the board of directors and vice-president of the Karyall Body, Inc.

... ROSS CHASTAIN, appointed special representative in charge of field sales for the Eis Corp., Middletown, Conn.

... W. F. WRIGHTNOUR, director of training, tire div., United States Rubber Co.

... L. W. FRIZZELL, appointed manager of the tire, battery and accessory unit of the domestic marketing department of the Gulf Oil Corp.

... FRED C. SCHEEL, manager of truck sales for Lare & West, Inc., Ford dealers in Detroit, Mich. He was formerly with the Federal Motor Truck Co.

... Appointed regional truck managers for the Dodge Div., Chrysler Corp.: CLARENCE S. EISENHUTH, Philadelphia; SAM C. MITCHELL, Portland, Ore.; THOMAS A. TINGLE, Atlanta; WILLIAM K. WEST, Oklahoma City; EUGENE A. REES, Kansas City region.

... WILLIAM F. ROCHE and THOMAS R. REDWOOD, representing the Radiator Specialty Co. in the Wilkes-Barre and Albany districts respectively.

... O. S. DOLLISON, elected vice-president of the Lee Rubber and Tire Corp. E. M. IKIRT, appointed general manager of their Republic Rubber Div.

... NORMAN HILL, manager of service products sales for the New Departure Div., General Motors Corp.

... M. RUSSELL KAMBACH, named advertising manager for Aluminum Co. of America.

(TURN TO PAGE 188, PLEASE)

Here is Big News!



At New Low Prices

- Develops PLENTY OF SUDS IN EITHER HOT OR COLD, HARD OR SOFT WATER.
- Simple application cuts grease, grime, leaves a clean shiny surface.
- Does not affect waxed or porcelainized finishes.
- No WIPING DRY necessary. Very economical to use.

Get Stanley's new car wash prices from your jobber today or write to—

Makers of the Famous **MOBO** Products

JOHN T. STANLEY CO., INC.

642 W. 30th St.

Est. 1865

New York 1, N. Y.

(Made in U. S. A.)

TACHOGRAPH

THE TIME-TESTED RECORDING SPEEDOMETER

Helps Drivers Control Vehicles...Encourages Good Driving Practices

Trucks, tractors, trailers, buses and other heavy-duty vehicles represent a big investment and must be handled efficiently if operation is to be profitable. One of the best assets a fleet operator can have to assure maximum protection of costly rolling stock is safe, confident drivers. Here's where Tachographs can help because they aid drivers in controlling their vehicles and encourage good driving practices.

Hundreds of fleet operators have found that through the use of Tachographs their payloads are handled efficiently, safely and economically. These time-tested recording speedometers permanently record every movement of each vehicle on a chart which graphically shows—When engine started...How long engine idled...When vehicle started to move...How fast it traveled...and distance traveled between stops.



READ HOW TACHOGRAPH HAS HELPED THESE DRIVERS



"My company requires 5 check stops for each run. If anything happens to the truck enroute that could be charged to negligence the Tachograph chart is there to show if I made my last check stop. It gives me a feeling of confidence to know that as long as I drive right my company is fully aware of it. In other words I feel that my years with P. I. E. have been fully recorded, thanks to Tachograph."

Ralph Massey
PACIFIC INTERMOUNTAIN EXPRESS



"I have heard a lot of fellow truck drivers say that Tachographs are just a bunch of telltales so the company will know all that goes on. I don't look at them that way. I truly believe they have helped my company in their Safety Program. I know they have helped me in mine, because they record all I do, and I try to bring in a chart showing careful practices."

John C. Disharoon
COASTAL TANK LINES



"While coming in on a run, I jack-knifed the truck making a corner. The roads were very icy and I had been driving slow. If I had not had the Tachograph to prove I had not been driving over 15 miles an hour, in that area, I would have lost my job. The Tachograph and its chart makes me a safer driver and my safe driving makes my job more secure."

Chris Seifert
RUAN TRANSPORT CO.



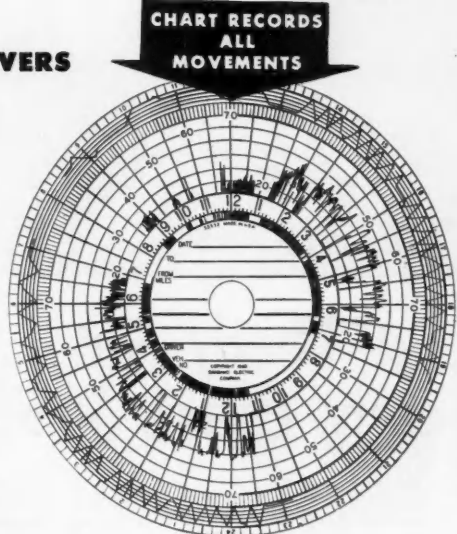
"The Tachograph has played an important part in helping me build my own personal safe driving record of more than a million miles or 16 years without a chargeable accident...the Tachograph helps the safe driver to drive safely."

John R. Winter (1947 Illinois Tractor-Trailer Champion)
DOORN TRANSFER CO.



"The Tachograph has helped me to become more efficient in my work. I can tell just how long I will be on each trip I pull without breaking any speed limits, and I know I will have a charted record to show where time was lost if I don't keep my schedule."

Sanders L. Carey
COASTAL TANK LINES



Mail this Coupon for Complete Information.

Wagner Electric Corporation

6476 PLYMOUTH AVE., ST. LOUIS 14, MO.

Please send a copy of Bulletin SU-3B.

Name and Position _____

Company _____

Address _____

City _____ State _____

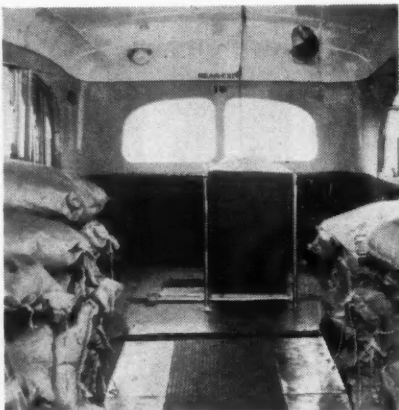
We operate _____ Vehicles

(NUMBER)

SSD-1

DISTRIBUTED BY
Wagner
Electric Corporation

Oversize salt hopper holds 1000 lb, and 5000 lb extra is carried in bags, as shown



Harrisburg Installs

Total labor and material cost of \$500 nets

Pennsylvania property efficient salt spreader

EDITORS' NOTE—Inasmuch as many properties undertake special construction projects during the summer, this article may supply inspiration for a very important piece of safety equipment within the limit of most budgets.

**Ready for
any brake job!**

Complete brake service pays off well, and United brings you everything you need for it! In the well-equipped shop shown here, for instance, are a United assortment of brake kits and parts . . . United brake hose assemblies . . . United master and wheel cylinders . . . United brake cables . . . a United bleeder tank. And all of these United parts and equipment are designed, engineered, and manufactured to make your work simpler, easier, and faster! Ask your NAPA Jobber about United's complete coverage! United Parts Mfg. Co., 1250 W. Van Buren St., Chicago 7.

UNITED

HYDRAULIC BRAKE PARTS • BRAKE CABLES SPEEDOMETER CABLES • FUEL PUMP PARTS

IN FIGHTING ICE, sleet and snow, we originally used four 2½-ton trucks equipped with hydraulically operated cinder spreaders. They were doing a good job.

In November, 1948, however, we were approached by the local representative of a spreader, operated by a one-cylinder gasoline engine, designed for spreading either salt or sand. It looked as though it had possibilities. We purchased one of these spreaders and installed it on a Jeep used the year round by our Transportation Department for maintaining our turnaround terminals. The combination proved so satisfactory that we now use the Jeep to salt bus stops.

A little later, we purchased new buses to replace our fleet of H-15, ACF buses. This brought on an idea by some of the boys in the shop to convert two of the H-15 buses into salt spreading equipment by equipping them with the new spreaders.

The buses were stripped of stanchions, seats, etc., and a piece of the flooring, approximately 34 x 37 in., behind the rear axle was cut out to accommodate the spreaders. The spreaders were mounted between the main frame members to the rear of the rear axle assembly under the floor facing the rear of bus. We eliminated the separate starting battery for the spreaders by hooking them up with the bus batteries.

6000 Lb. Salt Carried

THE original hopper on the unit had a capacity of 200 lb. of salt. This had to be replenished quite frequently, so we constructed a wooden hopper extension which was placed

Salt Spreaders in Over-Age Buses

By V. E. Zimmerman

Superintendent of Bus Maintenance
Harrisburg Railways Co., Harrisburg, Pa.

above the floor over the main unit. It feeds by gravity into the hopper on the spreader. This gives us a capacity of 1000 lb. In addition, each bus carries 50 100-lb. bags of salt, making a total load of 6000 lb.

Only one man is required to operate these vehicles. At the beginning of the run, the operator starts the spreader engine, which revolves a spinner and runs constantly. The chute, feeding the spinner, is controlled by a shutter. The shutter, in turn, is controlled by a cable and lever mounted to the right of the operator's seat.

We placed a mirror in the rear of the bus directly above the hopper. This reflects into a mirror above the windshield, and enables the operator to know, without leaving his seat, when the hopper should be refilled. Once the unit is in operation, the driver only has the chute lever to control, except for refilling the hopper when the supply of salt is exhausted.

The spreader also is equipped with a light which focuses to the rear of the vehicle on the area being treated. This assists the operator to check whether the unit is spreading properly.

Previously, our employees hesitated before volunteering for snow duty. Since these vehicles were put in operation, however, they agree to work extra hours more readily.

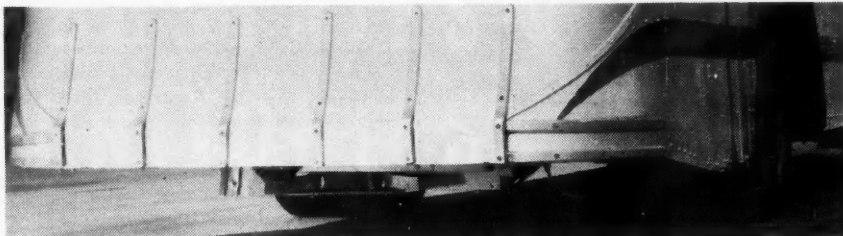
The cost of labor and material to convert these buses to salt spreaders was approximately \$500, and required 30 man-hours.

END

SLOW GAN

For a lasting finish on
your truck, try beating
the train to a crossing

COMMERCIAL CAR JOURNAL, April, 1950



Delivery end of Tarco Scotsman salt spreader is visible below body line

for greater safety

K-D's *New Class "A"*



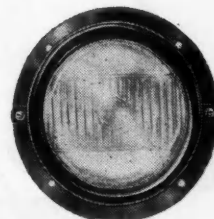
TURN SIGNAL LITES



KD 775
BRACKET OR
FENDER MOUNTING

The new SAE Class "A" Turn Signal Lites require at least 12 square inches of luminous area . . . the current trend of requirements by states. As usual, K-D is ready with the new KD 775 Class "A" Lites with 4 1/2" diameter Amber or Red lens . . . exceeding all specifications. Lens easily located by notch in door . . . locked in place for easy removal of the 21 c.p. bulb. KD 775 Lites of heavy-duty construction . . . finished in black enamel . . . have brass silver-plated reflectors.

KD 775 includes curved washers and 12" wire extending through stud for easy fender mounting. Also includes KD 1378 Bracket for vertical or horizontal installation. **KD 775 Flush** furnished with mounting pad for dust-proof, moisture-proof, and shock-proof assembly. Panel opening required 4 1/4" . . . flange diameter 6 3/8" . . . four bolt holes on 5 1/8" circle . . . depth inside flange 2".



KD 775
FLUSH
MOUNTING



KD 714
FLASHING

KD 714 Flashing Switch . . . built-in flasher with the audible click . . . both continuous in operation . . . completes the installation with any KD Turn Signal Lites.

OTHER KD TURN SIGNAL LITES

Single Face - - KD 9457
Double Face - - KD 9458
Flush Mounting - KD 9459
Black or Chrome Doors

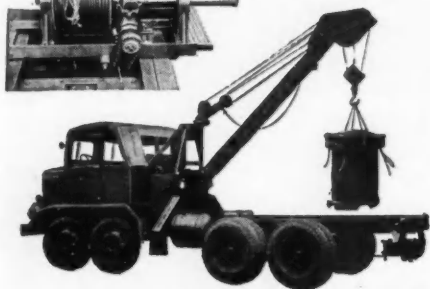
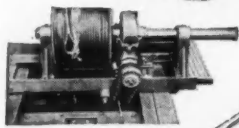
K-D LAMP COMPANY

1910 ELM STREET CINCINNATI 10, OHIO



**Industry Has Specified
SILENT HOIST Equipment
• Since 1918 •**

KRANE KAR Swing Boom Mobile Cranes: for materials-handling ... lifting, transporting, positioning, gasoline or Diesel, 1½, 2½, 5 and 10 ton capacities, 9 to 37 ft. booms (or telescopic booms), solid or pneumatic tires. Self-stabilizing without jacks or outriggers; unobstructed vision; fast, flexible, safe, easy to operate.



WINCHES: Capstans; Single and Double Drum, Jaw Clutch, Keyed and Friction Clutch Winches, 2,000 to 50,000 lb. Capacities.

SWING BOOM CRANES: Truck: Motor Power Operated; high capacity; takes up only a small space. For handling transformers, cable reels, lamp posts, trees, poles, manhole castings, etc. 9 to 31 ft. booms; one to 10 ton capacities.

TOWERS: 2 or 3 section type and Pantograph types, with plain, revolving or racking platforms.

TRIPOD-POLE DERRICKS:

for 35 ft., 45 ft., and 60 ft. Poles; single piece or telescopic side legs; removable cast steel fittings.



USERS: AT&T; N. Y. Tel. Co.; T.V.A.; Consolidated Edison Co.; W.U.; Municipalities throughout America.

WRITE FOR CATALOGS:

No. 79—KRANE KAR No. 70—Truck Equipment



Introducing

Continued from Page 184

... P. M. GOFF, assistant regional manager for the Allen Electric and Equipment Co., in region 15—nine states and three Canadian provinces.

... RUDOLPH A. GOEPFRICH, appointed chief engineer of the Automotive Brake department, Bendix Products division of the Bendix Aviation Corp., South Bend, Ind.

... CHARLES C. WOODARD, promoted to vice president in charge of sales for Bekins Van & Storage Co.

... DAVID H. RATNER, elected president of the Keeshin-Hayes Freight Lines, Mattoon, Ill.

... EARL ROBERTS, as sales engineer, Memphis Branch of Black & Decker Mfg. Co. A previous announcement in this department had given him another title. G. A. UNDERWOOD is branch manager at Memphis.

... CLARK R. LUPTON, appointed assistant chief engineer of the Automotive Brake department.

... E. V. DUFFY, named sales manager of the Pennsylvania Rubber Co.

... MALCOLM W. VALENTINE, named superintendent of inspection and quality control for Hunt-Spiller Mfg. Corp., Boston, Mass.

... WILLIAM KILGOUR and J. J. MULLEN, territory representatives for the General Tire and Rubber Co. in New York.

... CARL G. HORST, manager of retail merchandising of the replacement tire sales division of the B. F. Goodrich Co., W. B. FLORA, manager of retail credit sales.

... W. P. (SANDY) SANDERSON, Jr., will take over the southern Mississippi and Louisiana territory; Southeastern Texas will be covered by J. A. (ANDY) YOUNG, while central Texas and southern New Mexico will be worked by E. S. (EDDIE) EISENMENGER; ... C. W. (CHARLIE) DYER, assigned to the Oklahoma and Texas Panhandle; Florida and southern Alabama will be handled by R. R. (BOB) SLATE; all representing the Bear Mfg. Co.

END

Please resume your reading on P. 186

SLOW GAN

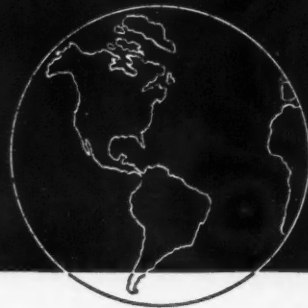
The man with a chip on his shoulder carries an unnecessary load



**Dayton Brake Drums
are Distributed through
National Wheel & Rim
Association Members**

AKRON, Ohio.....Motor Rim Manufacturers Co.
ALBANY, N. Y.....Wheels Incorporated
ALBUQUERQUE, N. M.....Wheels & Brakes, Inc.
ATLANTA, Ga.....Harris Automotive Service, Inc.
BALTIMORE, Md.....R. W. Norris & Sons
BIRMINGHAM, Ala.....Cruse-Crawford Wheel & Rim Co.
BOSTON, Mass.....Harvey Sales & Service Company
BOSTON, Mass., New England Wheel & Rim Company
BUFFALO, N. Y.....Frey, The Wheelman, Inc.
CALGARY, Alta., Canada.....Fisk Tire Service, Ltd.
CHARLOTTE, N. C., Carolina Rim & Wheel Company
CHICAGO, Ill.....Stone Wheel, Incorporated
CINCINNATI, Ohio.....Rim & Wheel Service
CLEVELAND, Ohio.....Motor Rim Manufacturers Co.
COLUMBUS, Ohio.....Hayes Wheel & Spring Service
CUMBERLAND, Md.....R. W. Norris & Sons
DALLAS, Texas.....Southwest Wheel, Incorporated
DAVENPORT, Iowa.....Stone Wheel, Incorporated
DAYTON, Ohio.....Rim & Wheel Service
DES MOINES, Iowa.....Des Moines Wheel & Rim Co.
DENVER, Colo.....Quinn & McGill Motor Supply
DETROIT, Mich.....H. & H. Wheel Service, Inc.
DETROIT, Mich.....Rim & Wheel Service Company
DOVER, Del.....R. W. Norris & Sons
EDMONTON, Can.....Alberta Wheel Distributors, Ltd.
FARGO, N. D.....Pioneer Rim & Wheel Company
FARGO, N. D.....Wheel Service Company
GRAND RAPIDS, Mich.....Rim & Wheel Service Co.
HAGERSTOWN, Md.....R. W. Norris & Sons
HARRISBURG, Pa.....Standard Wheel & Rim Co.
HARRISONBURG, Va., Harrisonburg Wheel & Parts, Inc.
HARTFORD, Conn.....Connecticut Wheel & Rim Co.
HOUSTON, Texas.....Southwest Wheel & Equipment Co.
INDIANAPOLIS, Ind.....Indiana Wheel & Rim Co.
JACKSONVILLE, Fla., Southeast Wheel & Rim Co.
KANSAS CITY, Mo.....Borbein, Young & Company
KNOXVILLE, Tenn.....Harris Automotive Service, Inc.
LOS ANGELES, Motor Rim & Wheel Service of Calif.
LOUISVILLE, Ky.....Auto Wheel & Rim Service
MEMPHIS, Tenn., Beller Wheel, Brake & Supply Co.
MILWAUKEE, Wisc., Stone Manufacturing Company
MINNEAPOLIS, Minn.....Pioneer Rim & Wheel Co.
MINNEAPOLIS, Minn.....Wheel Service Company
MONTREAL, Can., General Automobile Equip., Ltd.
NASHVILLE, Tenn., Beller Wheel, Brake & Supply Co.
NEWARK, N. J.....Wheels Incorporated
NEW HAVEN, Conn., Connecticut Wheel & Rim Co.
NEW ORLEANS, La., Southern Wheel & Rim Service
NEW YORK, N. Y.....Wheels Incorporated
OKLAHOMA CITY, Okla., Southwest Wheel, Inc.
OMAHA, Nebr.....Morgan Wheel & Equipment Co.
OMAHA, Nebr.....Omaha Rim & Wheel Company
PEORIA, Ill.....Peoria Wheel & Rim Company
PHILADELPHIA, Pa.....Kay Wheel Sales Company
PHILADELPHIA, Pa., Thomas Wheel & Rim Co., Inc.
PITTSBURGH, Pa.....Wheel & Rim Sales Company
PORTLAND, Oregon.....Auto Wheel Service
PORTLAND, Oregon.....Six Robbles, Incorporated
RALEIGH, N. C., Carolina Rim & Wheel Company
RICHMOND, Va.....Dixie Wheel & Rim Company
ROCHESTER, N. Y.....Frey, The Wheelman, Inc.
ST. LOUIS, Mo.....Borbein, Young & Company
SALISBURY, Md.....R. W. Norris & Sons
SALT LAKE CITY, Utah, Henderson Wheel, Rim Serv.
SAN ANTONIO, Texas, Southwest Wheel & Equip. Co.
SAN FRANCISCO, Motor Rim & Wheel Serv. of Calif.
SAN FRANCISCO, Calif.....Wheel Industries, Inc.
SEATTLE, Wash.....Six Robbles, Incorporated
SOUTH BEND, Ind., Wire & Disc Wheel Sales Co.
SOUTH HILLS, Va., South Hills Wheel & Parts, Inc.
SPOKANE, Wash., Bearing & Rim Supply Company
SPRINGFIELD, Ill., Illinois Wheel & Brake Company
SPRINGFIELD, Mo.....Borbein, Young & Company
SYRACUSE, N. Y., Colbourn Wheel & Rim Company
TACOMA, Wash.....Six Robbles, Incorporated
TOLEDO, Ohio.....Wheel & Rim Sales Company
TORONTO, Canada.....Harpham Brothers, Ltd.
TORONTO, Canada, Wheel & Rim Co. of Canada, Ltd.
VANCOUVER, B. C., Canada.....Wheel & Equip., Ltd.
WICHITA, Kansas.....Borbein, Young & Company
WINCHESTER, Va.....R. W. Norris & Sons
WINNIPEG, Can., Automobile Supply Company, Ltd.
WINNIPEG, Canada, Fort Garry Tire & Service, Ltd.
WINSTON-SALEM, N. C., United Automotive Service

TULSA* WINCHES INDUSTRIES TERRITORIES



Distributors FOR TULSA WINCHES

ALABAMA

Kimerling Truck & Parts Co., Inc., Birmingham
Robinson Truck & Equipment Co., Mobile

ARKANSAS

Southern Equipment Company, Fort Smith
Southern Equipment Co., N. Little Rock

ARIZONA

Welch Manufacturing Company, Phoenix

CALIFORNIA

Modern Vehicle Company, San Francisco
Rankin Brothers, Lynwood
Standard Auto-Body Co., Inc., Los Angeles

COLORADO

The Winter Weiss Company, Denver 2

CONNECTICUT

Truck Equipment Company, Inc., Norwalk
Truck Industries, Inc., Greenwich
Curran-Waring Equipment Co., Inc., Norwalk

DISTRICT OF COLUMBIA

Watson Automotive Equipment Co., Washington

FLORIDA

Miller Truck Equipment Company, Miami
Rivers Body Factory, Jacksonville
West Florida Equipment Company, Marianna

GEORGIA

Truck Parts Company, Inc., Atlanta

ILLINOIS

Auto Truck Equipment Sales, Chicago
Drake-Scruggs Equipment Co., Springfield
Bill Montgomery Body and Trailer, Salem
Nix Brothers, Olney
Scruggs-Drake Equipment Company, Decatur
Vultz Brothers, Inc., Chicago

INDIANA

South Side Equipment Company, Indianapolis
Truck Equipment Sales, Fort Wayne
Roy C. Whayne Supply Company, Evansville

IOWA

E. Cohn & Sons, Inc., Cedar Rapids
Pecaut Industrial Supply Company, Sioux City
Weston Dump Body Company, Des Moines

IDAHO

The Lang Company, Inc., Boise

KANSAS

Truck Parts and Equipment, Inc., Wichita 11

KENTUCKY

Roy C. Whayne Supply Company, Louisville
Roy C. Whayne Supply Company, Paducah

LOUISIANA

Dealers Truck Equipment Company, Inc., Shreveport
Massart Tire & Supply, Lafayette
Massart Tire & Supply, Lake Charles

MARYLAND

Watson Automotive Equipment Company, Baltimore

MASSACHUSETTS

Springfield Commercial Body Co., Inc., Cambridge

MICHIGAN

Ashton Power Wrecker Equipment Co., Inc., Detroit
I. H. Gingrich and Sons, Grand Rapids
Swift Body and Equipment Co., Inc., Saginaw

MINNESOTA

Bachelor and Dunn, Inc., Duluth 6
Smith-Dunn Company, Inc., Minneapolis

MISSISSIPPI

A. P. Lindsey, Distributor, Inc., Jackson

MISSOURI

The Ashton-Richards Company, Kansas City
Bailey Auto Body Company, St. Louis
Cunningham Equipment Company, Springfield
Rothschild's Iron and Metal Works, Joplin

MONTANA

Smith Equipment Company, Great Falls

NEBRASKA

Badger Body Manufacturing Company, Omaha
Highway Equipment and Supply Co., Lincoln 1

NEW JERSEY

Auto Truck Equipment Company, Paterson 1
Adam Black & Sons, Inc., Jersey City
Transportation Equipment Co., Inc., Newark

NEW MEXICO

M. & F. Equipment Company, Albuquerque
Watson Truck and Supply, Hobbs

NEW YORK

Binghamton-Heil Equipment Corp., Endwell
Brinberg Body Builders, Long Island City
Maday Body and Equipment Corp., Buffalo
Midway Parts and Service Co., Albany 5
Syracuse Auto Parts, Inc., Syracuse

NORTH CAROLINA

Mitchell Distributing Company, Inc., Raleigh
Mitchell Distributing Company, Inc., Spruce Pine
Twin-States Equipment Company, Charlotte

NORTH DAKOTA

Smith, Incorporated, Fargo

OHIO

The Melvin L. Aston Welding Company, Cincinnati
The Carnegie Body Company, Cleveland
The Dayton Wood Products Company, Dayton
Hercules Body Sales Company, Columbus
Middlekauff, Inc., Toledo
Zanesville Tool and Supply Company, Wooster
Zanesville Tool and Supply Company, Zanesville

OKLAHOMA

American Body and Trailer, Inc., Oklahoma City
American Body and Trailer, Inc., Tulsa
Leland Equipment Company, Oklahoma City
Leland Equipment Company, Tulsa

OREGON

Jack Helser Machinery Company, Portland

PENNSYLVANIA

Doerr Brothers, Inc., Pittsburgh
Fowler and Fowler, Inc., Oil City
Wm. & Harvey Rowland, Inc., Philadelphia
Trailco Mfg. & Sales Co., Hummel's Wharf

SOUTH DAKOTA

Pecaut Industrial Supply Company, Sioux Falls

TENNESSEE

Furlow-Cate, Inc., Chattanooga
Martin Machinery and Supply Company, Knoxville 1
Martin Machinery and Supply Company, Nashville
Rogers Manufacturing Co., Inc., Nashville
Scruggs Equipment Company, Memphis

TEXAS

Adams Truck Company, Inc., San Antonio
American Body and Trailer, Inc., Amarillo
City Welding Shop, Borger
Commercial Truck Company, Lubbock
Alex Feigelson Company, Beaumont
French Tool and Supply Co., Odessa
Hobbs Trailer Sales Company, El Paso
Leland Equipment Company, Longview
Don Maxwell Company, Odessa
Motor Truck Equipment Corp., Dallas
Motor Truck Equipment Corp., Fort Worth
Oilfield Truck Equipment Company, Houston
Truckers Equipment, Inc., Corpus Christi
Wichita Engineering Company, Wichita Falls

UTAH

The Lang Company, Inc., Salt Lake City

VIRGINIA

Smith-Moore Body Company, Inc., Richmond
Transit Trailer Company, Portsmouth

WASHINGTON

Andrews Equipment Service of Wash., Inc., Spokane
Utility Trailer Co., Seattle

WEST VIRGINIA

West Virginia Tractor and Equipment Co., Inc., Charleston

WISCONSIN

Mullins Body, Inc., Milwaukee
Northern Truck Service, Green Bay

WYOMING

Gehring Equipment Company, Casper

FOREIGN COUNTRIES

CANADA

Ferguson Supply Alberta Limited, Calgary, Alta.
Truck Parts & Equipment Ltd., Vancouver, B. C.
Willock Distributing Company, Vancouver, B. C.
Phil Wood Industries Limited, Windsor, Ontario

MEXICO

Auto Servicio, S. A., Mexico, D. F.

NEW ZEALAND

Motor Specialties Ltd., Auckland, C.I.

VENEZUELA

Joaquin Avellan, Caracas

BRITISH WEST INDIES

Neal & Massy Engineering Company Ltd., Trinidad

AFRICA

W. S. Thomas and Taylor Ltd., Union of S. Africa, c/o J. A. Ewing & McDonald, Inc., New York 16, N. Y.

HAWAII

A. F. Stubenberg Ltd., Honolulu 13

For detailed information please write your nearest distributor or direct to Tulsa Winch

Tulsa Winch
DIVISION OF
TULSA, OKLAHOMA VICKERS Inc.

815-19 E. FIRST STREET

*Reg. U. S. Pat. Off.

THE WORLD'S LARGEST MANUFACTURER OF TRUCK POWER WINCHES

CCJ News Reports

Continued from Page 27

Principal speakers at the meeting are (left to right): Dr. J. O. Christianson, Lee R. Jackson, Albert Bradley.

IHC Movie Shown

Two 30-min. color movies, produced and distributed by the motor truck division of International Harvester Co., are scheduled to show before more than 5,000,000 persons during the year 1950, company officials have announced. Both are sound movies.

One film, "An African Adventure," comprises action pictures taken by Commander Attilio Gatti, noted explorer, during a recent safari to the Mountains of the Moon and Mount Kilimanjaro, "the roof of Africa." The other film, entitled "International Presents the New L-line Trucks," features photography of the severe testing of trucks on the proving ground and over roads and highways throughout the country.

B-W Opens Training Program

A new sales and service educational program, for company distributors and truck and bus operators, has been announced by Bendix-Westinghouse Automotive Air Brake Co., Elyria, Ohio.

The complete program consists of two types of training meetings; a Service Clinic for operators and a Sales Training Program for the sales and service employees of Bendix-Westinghouse distributors.

The Service Clinic is intended specifically for personnel of truck and bus operators and is designed to familiarize them with air brake equipment and service problems. Slide films illustrating equipment on the vehicle point out techniques for diagnosing service requirements and simplifying maintenance problems. Sales training meetings for distributor personnel will be held by trained factory representatives.

Freight Volume Up

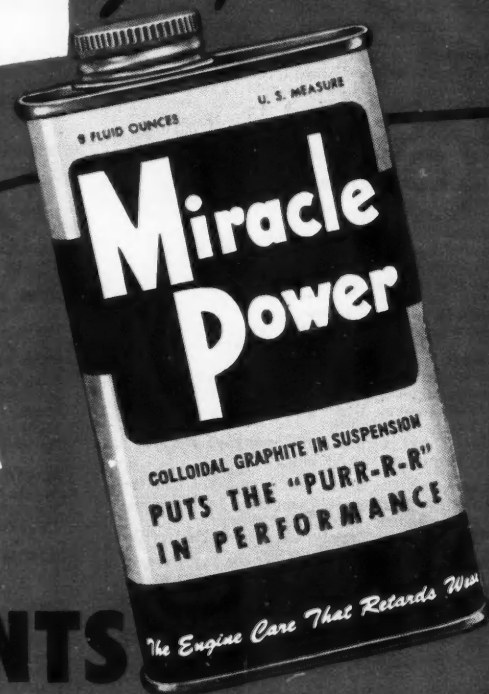
The volume of intercity freight hauled by Class I motor carriers in the fourth quarter of 1949 increased 3.4 per cent over that carried in the same period last year. It compares with increases of 2.9 per cent in the first quarter, 3.4 per cent in the second quarter, and 6.7 per cent in the third quarter of this year as compared to the same quarters last year.

The Research Department of the American Trucking Associations, Inc., analyzed reports of 1,434 Class I intercity common and contract carriers indicate that they carried an aggregate of 35,222,315 tons in the fourth quarter of 1949 as compared to 34,068,652 tons in the same period last year.



At Last! Graphite is

as advertised in
POST



**PREVENTS
DRY STARTING**

When a cold engine is started, it may be five minutes before oil reaches all parts. This **DRY STARTING**—dry metal scraping against dry metal—means costly repairs. Miracle Power prevents **DRY STARTING** by providing "stand-by lubrication."



The volume of freight transported by motor carriers in January increased 1.9 per cent over December and 12.3 per cent over January, 1949.

Comparable reports received by AIA from 312 carriers in 44 states showed these carriers transported an aggregate of 3,147,259 tons in January, as against 3,088,151 tons in December and 2,802,980 tons in January, 1949.

Approximately 74 per cent of all tonnage transported in the month was hauled by carriers of general freight. The volume in this category increased 4.0 per cent over December and 15.2 per cent over January, 1949.

A-H Film Aids Mechanics

A new sound-slide film which graphically shows points which the repairman should check when reconditioning an engine, has been produced by the American Hammered Piston Ring Department of Koppers Company, Inc. It will be shown at dealer and jobber meetings throughout the country during the coming year.

The sound-slide film constitutes a review of engine repair, and is designed to be followed by a panel discussion. At such discussions a jobber, shop foreman, a fleet operator, a leading independent repairman of the area, and a Koppers Co. factory

representative will discuss additional topics and answer questions.

Shale Oil Fuel Report

Progress in developing synthetic fuels from oil shale and coal is reported by Interior Secretary Chapman in his 1949 report to Congress. These fuels, he stated, are nearing the competitive range of those from petroleum. His report presents a detailed summary of the activities and findings at each of the laboratories and demonstration plants of the Bureau of Mines.

Truck Registrations Down

New truck registrations for January, based on tabulations in 37 states, were running slightly lower than for January, 1949, the totals being 47,983 for January, 1950, and 49,303 units for January, 1949. The total for the month should approximate 64,000 units, Polk officials estimated.

New car registrations for January will surpass 365,000 units, which will be at least 80,000 units greater than any previous January in the 25 years R. L. Polk & Co. has been compiling statistics for the industry. The highest previous first month was 1937, when 280,615 new passenger cars were titled.

Compromise Aid Bill Offered

The administration Federal Aid bill for highways has been introduced in the House by Rep. William M. Whittington (D., Miss.), chairman of the House Public Works Committee. Calling for \$570 million annually in aid to the states, it appears to represent a compromise between President Truman's request that regular Federal Aid be held to \$500 million a year and the recommendation of the American Association of State Highway Officials that \$810 million annually be available.

The bill sets aid for primary and secondary systems at \$500 million but it provides a special \$70 million for improve-

(TURN TO PAGE 194, PLEASE)

Modern Trucks Service Oil Fields



This oil well service unit with mast, mounted on a Model WC-20 White Super Power truck is capable of rough, off-the-highway service. It is operated by the Stanolind Oil & Gas Company of Tulsa, Okla., in the fields of East Texas. Gross vehicle weight, including the mast and other equipment, is 23,530 lb. Special cab has extra door and seating capacity for a full crew

Tamed for Engine Use!



Perfection of Non-abrasive Synthetic and Method of Permanent Suspension Finally Release Remarkable Lubricating Qualities of Graphite

For years, automotive engineers have struggled to utilize the recognized advantages of graphite as an aid to better engine lubrication. They have been blocked by the abrasive particles in natural graphite and by its tendency to clog small openings.

These obstacles have been overcome by Miracle Power.

Miracle Power contains colloidal synthetic graphite free from all abrasives and in complete suspension. Clogging is eliminated because the graphite particles will not build upon themselves and are so micromic in size that it takes 18,000 to surround a human hair.

Added to gas and oil, Miracle Power forms a breath-like graphoid lubricating film on all vital engine parts. This film provides "stand-by lubrication" during temporary absence of oil . . . protects moving parts from harmful friction . . . prevents DRY STARTING . . . fights corrosive acids.

Ask your wholesaler for Miracle Power or write—

THE AP *Miracle Power Division*
PARTS CORPORATION
AP BUILDING • TOLEDO 1, OHIO
MUFFLERS • PIPES • MIRACLE POWER • dgf-123

CCJ News Reports

Continued from Page 193

ments on the Interstate Highway System—on which emphasis was also placed by Mr. Truman in his budget message—where apportionments would be based on population.

Several changes asked by AASHO are incorporated in the bill. One, designed to make toll roads unnecessary, would allow states to borrow funds for Interstate System improvements through bonds, and retire the principal of the bonds from future

Federal Aid payments. Another would allow states to put up as little as 25 per cent toward Interstate System projects, with the Federal Government putting up as much as 75 (this might even be more in the case of states with much public lands).

Training Film Available

A new safety training film entitled "Easy on the Eyes" has been announced by the National Safety Council. The film opens on an emotional appeal for workers to realize what their eyes mean to them, then shows how easily eyesight may be lost and

that such loss is personal. The film shows what glasses are best for specific jobs, presents case histories of injured workers and the dramatic testimony of blind persons.

"Easy on the Eyes" is available from the National Safety Council in the usual 35 mm sound slidefilm, but it also is offered in a new form for 16 mm sound-motion projectors.

Truck Casing Production Up

Production of truck and bus casings was 10 per cent higher in January than it was in December with 1,116,701 units produced against 1,014,946 units in the previous month. Stocks of truck and bus casings were up 8 per cent to 1,877,315 units.

Manufacturers' shipments of passenger car castings in January were up 17.74 per cent to 5,032,879 units from 4,274,442 in December, according to The Rubber Manufacturers Association's monthly report. Shipments of truck and bus casings were down 3.53 per cent to 925,693 from 959,558 units in December.

Roadeo Membership Announced

Membership of the 1950 National Truck Roadeo Committee of the American Trucking Associations, Inc., has been announced as follows:

Lamar Strain, Petroleum Transportation, Seattle, is the new chairman. Other new members of the committee are Frank W. Leach, The Texas Co., Dallas; Lloyd Deardorff, Consolidated Freightways, Minneapolis, and John M. Flake, Associated Truck Lines, Grand Rapids.

Renamed to the committee were Philander Cooke, Cooke's Express, New Haven; Clarence Finkle, Passaic Terminal & Transfer Co., Allwood, N. J.; James P. McComas, Atlantic Coast Freight Lines, Baltimore; Guy Rutland, Motor Convoy, Inc., Hapeville, Ga.; Ewing Green, Mason & Dixon Lines, Kingsport, Tenn.; Alex K. Scherer, Scherer Freight Lines, Ottawa, Ill.; John Ruan, Ruan Transportation Co., Des Moines; C. L. McClaskey, M. & F. Equipment Co., Albuquerque, and W. J. Rellafor, Asbury System, Los Angeles.

The National Truck Roadeo will be held in New York City in October as part of ATA's sixteenth annual convention.

(TURN TO PAGE 98, PLEASE)



LABORATORY-TESTED
for consistent quality

SOL-SPEEDI-DRI

SLIPPERY FLOORS VANISH when you use Sol-Speedi-Dri... America's original and largest-selling oil and grease absorbent. Sol-Speedi-Dri gives you a better-looking shop and helps reduce fire hazards too. Production controls and selective mining insure a fine product... laboratory tests safeguard its consistent quality. Available from jobbers everywhere. Mail coupon for big FREE sample!

Warehouse stocks maintained in principal cities of the United States and Canada.

Inquirers in New York, New England, and New Jersey should write to Speedi-Dri Corp. Elsewhere in U.S. to Waverly Petroleum Products Co., 1724 Chestnut St., Philadelphia 3, Pa.

SPEEDI-DRI CORP., 210 W. Washington Sq., Philadelphia 5, Pa.



FREE SAMPLE:

Fill out the coupon and mail today for big, free sample.

Name _____
Address _____
City _____
State _____



"Faster, Mac, faster!—I'm on a schedule!"

FILTRATION *KEEPS OIL CLEAN* *BETWEEN OIL CHANGES!*

PROTECT YOUR ENGINES IN THE CRITICAL PERIOD BETWEEN OIL CHANGES WITH WALKER OIL FILTERS

Oil changes are only *half the story* of safe lubrication, sure engine protection.

Because contamination begins immediately after the oil change, your engines must be protected *in the critical period between changes* by an efficient, properly-functioning oil filter.

Walker patented *Laminar* construction takes out the dust and dirt your engines breathe in . . . removes the many, different kinds of engine-manufactured contaminant *before* they build up into an abrasive mixture—*before* they wear away the very parts clean oil protects.

Protect your engine with clean oil *every mile* these three ways:

- ① **Change the oil** periodically to protect against oxidation, dilution and unfilterable contaminants.
- ② **Change the filter** cartridge to prevent the accumulation of abrasives, moisture and sludge *between* oil changes.
- ③ **Change to Walker** to get the added protection of "3-Dimension" filtration *in the critical period between oil changes!*

Take advantage of Walker's superior performance. See your Walker jobber now for both your oil filter and replacement cartridge requirements.

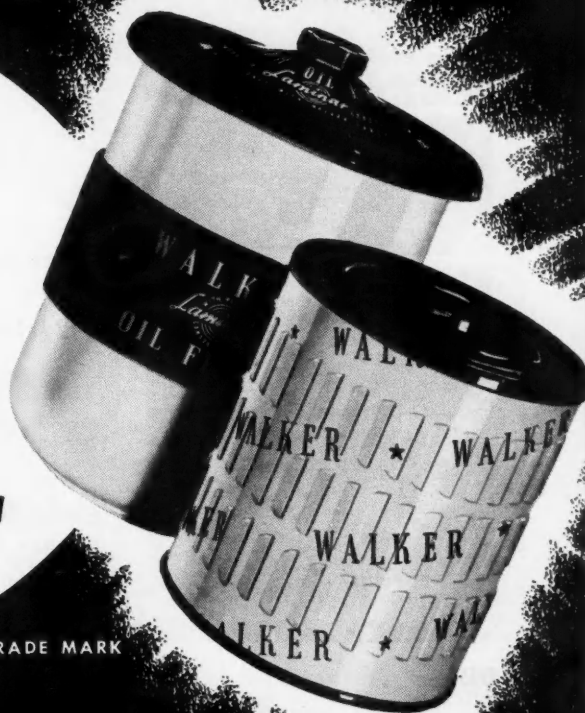
KEEP OIL CLEAN

between

OIL CHANGES

WALKER OIL FILTERS

WITH PATENTED *Laminar** CONSTRUCTION



* TRADE MARK

WALKER MFG. CO. OF WISCONSIN • RACINE, WISCONSIN

CCJ News Reports

Continued from Page 194

Diesel Enters "500" Races

Again entered in the 1950 Indianapolis "500" automobile race classic with a diesel-powered car, after an absence of 16 years, the Cummins Engine Co., Columbus, Ind., is confident that they will have a highly competitive entry in the race.

"The engine is a highly supercharged, revised version of the new high-speed JS engine. It is a four-cycle engine with a

piston displacement of 401 cu in. The bore is 4.125 in. with a 5-in. stroke. It is capable of turning up to 4000 r.p.m.

Only 10 in. longer, and approximately 350 lb heavier, than the 4-cylinder Meyer-Drake gasoline engines which made a clean sweep of the top 10 positions in the 1949 "500" race, the Cummins diesel engine will be installed in a modern tubular-frame chassis under construction in the Kurtis-Kraft plant at Los Angeles. The over-all appearance of the Cummins Diesel Special will be very similar to conventional gasoline-powered race cars. It will have a 104-in. wheelbase, which is shorter than some and longer than other cars in last

year's race. Body height from the ground line will be about 38 in., which is approximately 10½ in. lower than the previous Cummins' diesels. The rear axle will be a Conze quick-change racing axle.

Industrial Notes

An order for 300 motor coaches costing in excess of \$3,500,000 was placed recently by the Bus Operator's Cooperativa, Havana, Cuba, with **General Motors Truck & Coach**, Pontiac. GM 2-cycle Diesels will power 150 of the heavy duty coaches.

The **International Harvester Co.** has awarded all but one major contract for the construction of a service parts depot in the Trinity Industrial District in Dallas, Texas.

Recently the first White Super Power Trucks rolled off the assembly line at the Mexico City plant of Automotriz de Mexico, S. A., under an agreement announced by the **White Motor Co.**

The tire and tube production of the **Inland Rubber Corp.** of Chicago, has been acquired by the **Mansfield Tire and Rubber Co.**, of Mansfield, Ohio.

At the annual field service meeting, held in Seattle, the **Kenworth Motor Truck Corp.** played host to its distributors and representatives of their mechanical departments, and to representatives of leading purveyors.

Complete "refresher" courses for Zone and district managers of the **Sealed Power Corp.** were held recently in a series of coast-to-coast meetings under direction of home office officials.

Contracts for the erection of an additional building have recently been awarded by **Oshkosh Motor Truck, Inc.**, Oshkosh, Wis. The new building will house a new assembly line.

To assist operators to save on their industrial tire and wheel costs, the **B. F. Goodrich Co.** has developed a tire and wheel analysis service in which experienced tire engineers will visit industrial plants to make complete cost surveys of materials-handling operations.

Trailer servicing facilities have recently been expanded in the **Fruehauf Trailer Co.** factory branches at St. Paul, Minn., Birmingham, Ala., and Nashville, Tenn.

The new division office of the **OPW Corp.**, Cincinnati, Ohio, in the metropolitan New York City area, is now located at 120 Liberty St.

A new engineering building will be constructed for the **International Harvester Co.**, directly opposite their present Fort Wayne Works.

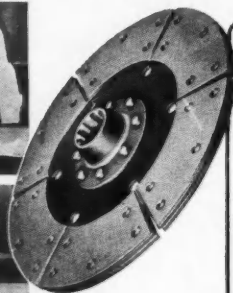
The **Black & Decker Mfg. Co.** opened a new service station and sales office in Portland, Ore. This branch will offer repair and service to tool users in Oregon, southern Washington and southern Idaho.

(TURN TO PAGE 200, PLEASE)

The City of New York uses Velvetouch All-Metal Clutch Plates and Facings



For year-round dependability and maximum economy the City of New York specifies Velvetouch... the all-metal facing that out-performs and outlasts 'em all! In heavy weather, when snow bound streets put extra strain on clutch plates and facings... Velvetouch keeps trucks and tractors "on the job" with fewer adjustments, fewer breakdowns... because Velvetouch is built to take it! Send for details today.



25 years of
service
1924-1949

FOR BRAKE AND
CLUTCH USE

VELVETOUCH

THE S. K. WELLMAN CO.

1374 E. 51st St • Cleveland 3, Ohio

THE S. K. WELLMAN CO. WAREHOUSING CENTERS

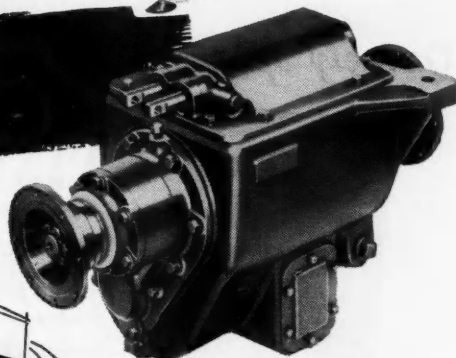
ATLANTA . 119 14th St., N. E.
BOSTON . 171 Brighton Ave.
CHICAGO . 2800 S. Parkway
CLEVELAND . 1392 E. 51st St.
DALLAS . 3407 Main St.
LOS ANGELES 1110 S. Hope St.
PHILADELPHIA 97 E. Montana St.
PORTLAND 636 N. W. 16th Ave.
SAN FRANCISCO 424 Bryant St.
TORONTO, ONTARIO, CANADA
The S. K. Wellman Co., of
Canada, Ltd. 2839 Dufferin St.

WASHINGTON, D. C., OFFICE
1101 Vermont Ave., N. W.

Nature didn't intend
an elephant to have

the speed of a horse.....

but the **Spicer** "BROWN-LIPE"
AUXILIARY TRANSMISSION
gives you all the
advantages of both



*Available with full torque
top mounted power take-off.*

FASTER TRIPS. Overdrive gears *increase* truck speed while *reducing* engine revolutions. More miles per truck hour, with lower fixed charges per trip. Lower driver cost per trip. Less overtime.

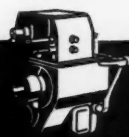
REDUCE COSTS. Every unit—motor, clutch, transmission, drive shaft, axle, brakes, tires—operates with less strain. Destructive lugging and overspeeding of engines practically eliminated.

There is a Spicer Brown-Lipe Auxiliary Transmission to exactly meet your needs—Spicer Engineers will help you reduce your cost per ton mile

● **MORE POWER.** With a Spicer Brown-Lipe 3-speed Auxiliary, you get from 26% to 111% more *pulling power* in underdrive gears! And you will average 10% more horsepower after each shift! Your truck can handle heavier loads easier—that means more profitable payloads.



PROFITS GEARED UP. Less down time; fewer repairs; reduced gas, oil and tire bills; more consistent and bigger payload income—all these are assured by a Spicer Brown-Lipe 3-speed Auxiliary Transmission.



46 YEARS OF

Spicer

SERVICE

SPICER MANUFACTURING • Division of Dana Corporation
TOLEDO 1, OHIO

TRANSMISSIONS
TORQUE CONVERTERS

PASSENGER CAR AXLES • CLUTCHES • PARISH FRAMES • STAMPINGS • FORGINGS
UNIVERSAL JOINTS • SPICER "BROWN-LIPE" GEAR BOXES • RAILWAY GENERATOR DRIVES

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Starting in March, a training clinic on appearance reconditioning of used cars and trucks is being offered to Ford dealers through the service department, **Ford Div., Ford Motor Co.**

Two additional electrical division sales offices have been established by **Wagner Electric Corp.** of St. Louis. These two offices are located in New Orleans at 227 International Trade Mart and in Davenport in the Kahl Building.

Combining the Boston and Buffalo branches, the **General Tire & Rubber Co.** has formed a northeast sales division with James W. Haggerty as top executive. Headquarters will remain in Boston.

A patent on the Nylon shock shield, which it uses in all its truck and bus tires, has been assigned to the **B. F. Goodrich Co.**

The **National Air Sander, Inc.**, Rockford, Ill., have just moved offices and factory to a new and larger building in Rockford.

A heavy production on its regular line of economy vehicles, large government Jeep

manufacture for the summer period and the institution of a new sales program are planned by **Willys-Overland Motors**.

A reduction in fleet and dealer prices on most models of **Thornton drives and Load-Booster** third axle units for Chevrolet trucks was recently announced by **Detroit Automotive Products Corp.**

Engineers of the **Seiberling Rubber Co.** have improved tire design by recontouring the low pressure tire into a "flex-arc" pattern. This design will be used in the company's "Safety" and "Safe-Aire" tires.

Prices of storage batteries have been substantially reduced recently by the **Willard Storage Battery Co.**

The **Electric Auto-Lite Co.** reported net earnings for 1949 of \$11,328,420 on sales and other income totaling \$218,439,748. This is equal to \$7.58 per share of common stock. Earnings for the preceding year were \$12,196,493, or \$8.16 per share, on sales of \$210,850,316.

Globe-Union, Inc., manufacturers of storage batteries and spark plugs has opened a sales office in the General Motors Building, Detroit, Mich.

February sales of the **Fruehauf Trailer Co.** accounted for one of the largest peacetime monthly volumes in the history of the company. The total dollar volume approximated \$8,000,000.

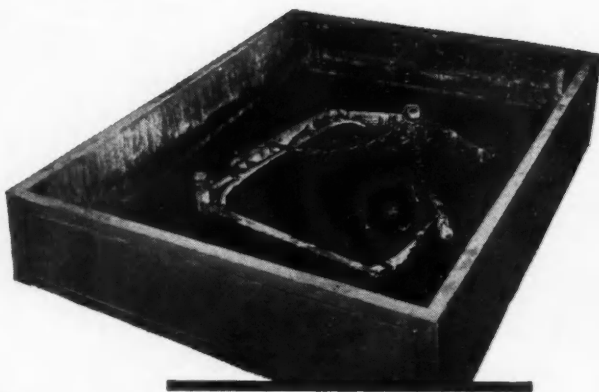
The **White Motor Co.**, in its annual report for the year ended Dec. 31, 1949, showed a net profit of \$970,653, equal to approximately \$1.41 per share. In 1948, White reported net profit of \$3,426,352, equal to \$4.98 per share. Net sales in 1949 amounted to \$77,398,860 as compared with \$97,804,546 in 1948. Number of commercial trucks and busses sold in 1949 was 10,419 as compared with 14,104 in the preceding year.

(TURN TO PAGE 202, PLEASE)

Traveling Workshop

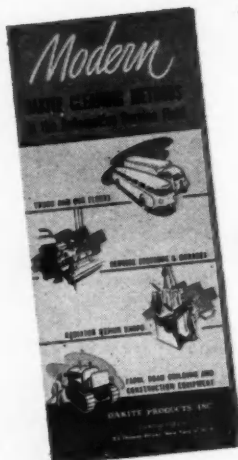


Panel trucks outfitted as workshops in which to display and demonstrate the Lisle line of garage tools have been put into service by the **Lisle Corp.**, Clarinda, Iowa. Carrying a tool board, rod aligner and the company's new wet honing machine, the trucks will tour the country demonstrating Lisle tools to automotive jobbers and working with established jobber salesmen



CLOGGED RADIATORS

Quickly opened up the low-cost Oakite way!



Free illustrated Booklet gives details on de-clogging radiators. Tells how to save money on all service shop cleaning jobs. Send today!

IF you are in the market for a really good compound for cleaning out clogged radiators—here it is . . . **Oakite Stripper**.

Built-for-the job Oakite stripper has powerful cleaning action. It quickly ousts tube-clogging sludge and silt. Solutions stand up for long periods. Up-keep is very low.

Your local Oakite Technical Representative will gladly help you install a simple boil-out set up for your radiator repair work. Just give him a call. Or drop us a post card for complete details. No obligation either way.

OAKITE PRODUCTS, INC., 408 Thames St., NEW YORK 6, N. Y.
Technical Service Representatives in Principal Cities of U. S. & Canada

OAKITE

SPECIALIZED INDUSTRIAL CLEANING
MATERIALS • METHODS • SERVICE



MORE MILES • MORE SATISFACTION
with Belden SPARK PLUG WIRES
BATTERY CABLES
PRIMARY WIRES

FOR EVERY AUTOMOTIVE WIRING NEED

Battery Cables • Spark Plug Wires
Lighting Wires
Cordlites, Extension Cords, and Tools

Belden
Automotive **WIRE**

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Labor Plans Outlined

Publication of a new study of health and welfare plans for trucking company employes which outlines five basic recommendations to truck operators for the setting up of such plans has been announced by Benjamin R. Miller, Director, ATA Industrial Relations Department.

The study titled "Health and Welfare Plan for Trucking Employes" had been

approved recently by the ATA Industrial Relations Committee. In addition to the recommendations to truck operators with respect to inaugurating such plans, the study includes formulas by which an employer may estimate the cost to his particular company of such a program. Further, it includes a complete description of various health and welfare plans which have been acceptable to trucking unions.

ICC Studies Carrier Status

The "primary business test" and other basic principles enunciated by the ICC in the "Woitishek," "Lenoir" and "Schenley"

cases in distinguishing between private and for-hire motor carriage have again been applied by the commission in the disposition of two more formal proceedings involving the question of private carrier status.

In Docket MC-111212, an application for determination of status brought by the Corry-Jamestown Manufacturing Corp., ICC Examiners B. S. Simms and W. P. Sullivan have recommended dismissal of the contract carrier application upon a finding that the trucking operations involved are an integral part of and incidental to the applicant's principal business of manufacturing steel office furniture and equipment and therefore constitute private carriage for which no ICC operating authority is required.

The Corry-Jamestown operation consisted of transporting uncrated office equipment in its own vehicles to its various customers at charges equal to its actual cost of operation per mile or at the common carrier freight rate whichever was lower, and the pick-up of inbound supplies for its plant at Corry, Pa.

The Corry-Jamestown Corp. contended that its operations were those of a private carrier and filed the instant application with the Commission solely for its own protection in order to obtain an official determination of its status.

By order, dated January 23, in Docket MC-111415, ICC Commissioner Lee has summarily dismissed an application filed by the Marlin-Rockwell Corp. of Jamestown, N. Y., involving a somewhat similar situation.

Aluminum Production Up 25%

Production of primary aluminum was up more than 25 per cent in January, 1950, over December, 1949, from 82,322,329 pounds to 104,045,600 pounds, Donald M. White, Secretary of The Aluminum Association, reports. Shipments of aluminum sheet, strip and plate also moved up in January to 69,349,363 pounds from 62,524,984 pounds in December.

Cummins Enters Memphis

Completely equipped to handle the sales and servicing of Cummins Diesel engines in the Tri-State area, the recently constructed \$100,000 plant of the Cummins Diesel Sales Corp. was officially opened in February. The modern building located at 812 North Main St., Memphis, has 12,000 sq ft of floor space.

George Duck Retires

George H. Duck retired from Lee Rubber & Tire Corp. on April 1. Mr. Duck joined the organization as an assistant to the general sales manager of Lee Tire & Rubber Co. of New York, Inc., 24 years ago and three months later he was made advertising manager. In 1945, he was elected a vice president of Lee Rubber & Tire Corp., in charge of public relations.

(TURN TO PAGE 204, PLEASE)



**PLAY SAFE
DON'T DRIVE
WITHOUT**

**Signal-Stat
DIRECTIONAL SIGNALS**

**THE ONLY DIRECTIONAL SIGNAL WITH THE
BURN-OUT-PROOF SWITCH**

Favored because of their dependability and safety by both owners and drivers, Signal-Stats offer protection under all sorts of operating conditions. Approved by American Association of Motor Vehicle Administrators (AAMVA) and States requiring directional signals.

Signal-Stat CORPORATION
SIGNAL-STAT BUILDING
1430 Herkimer St., Brooklyn 33, N. Y.

STANDARD EQUIPMENT ON NATIONALLY ADVERTISED TRUCKS



LIGHTWEIGHT.. MORE FREIGHT.. BROWN ALUMINUM TRAILERS OPEN NEW MARKETS TO TRUCKERS

THE truckers have won again — with Brown Lightweight Aluminum Trailers.

Consolidated Freightways, Inc., hauls frozen fish 2,250 miles from the Pacific Northwest to Chicago. Using 35 Brown Trailers, Consolidated has set a precedent in hauling fresh fish on this run, competing in a new market for the first time. And there's a reason why Browns were chosen for this new venture in trucking.

Brown's lightweight construction puts the weight in the freight, gives operators more payload, more revenue per mile with the same driver hours. Lightweight materials plus a frameless, airplane-type monocoque con-

struction guarantee this weight saving.

And remember, there's only one aluminum trailer that's backed by over a quarter century's experience in working with lightweight metals. That's the Brown—the first and original lightweight aluminum trailer. Brown know-how and technique have kept Brown way ahead of the field, despite many imitations.

If deadweight is costing you dollars, or keeping you from competing in some markets, investigate Brown Aluminum Trailers. Put the weight in the freight where it pays off in revenue. See the Brown representative in your area or write us.

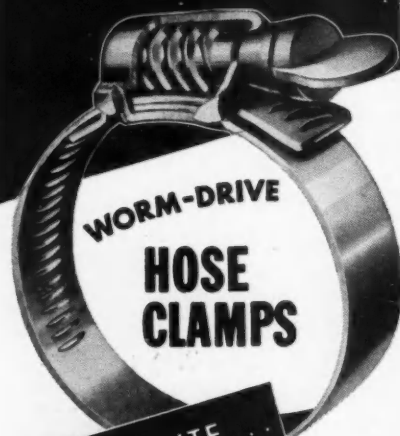


"The scale tells
the tale"



Toledo, Ohio • Spokane, Washington
Distributors in all principal cities

"Aero-Seal"



TAKE A BITE...



HOLD TIGHT

① At least 3 hardened steel threads always engaged in worm drive action in slotted band.

Clamp unscrews easily but will never work loose.

② Worm threads cannot touch or damage hose—curved saddle assures uniform sealing pressure around complete circumference.

- Long Life—use again and again
- Integral construction—no parts to lose
- Corrosion resistant—cadmium plated or stainless steel
- Two types—screwdriver slot or thumb grip

WRITE TODAY for FREE SAMPLE



"Aero-Seal"
HOSE CLAMPS

BREEZE CORPORATIONS, INC.
45 South Sixth Street, Newark, N. J.

CCJ News Reports

Continued from Page 202

New Tank Group Officers

The National Truck Tank and Trailer Tank Institute at its annual meeting held February 23 and 24 at Chicago elected the following officers to serve for 1950:

President, John H. Jensen, Quaker City Iron Works, Philadelphia, Pa.; Vice President, R. L. Blodgett, Pennsylvania Furnace & Iron Co., Warren, Pa.; Treasurer, L. R. Wood, Niles Steel Tank Co., Niles, Mich. In addition to the foregoing, Messrs. T. A. Burress, The Heil Co., Milwaukee, Wis., and W. M. Gadberry, Columbian Steel Tank Co., Kansas City, Mo., comprise the newly elected Executive Committee.

The Executive Committee re-elected Allan R. Smith as Executive Secretary of the Institute with headquarters at 120 South La Salle Street, Chicago, Ill.

Freight Classification Studied

The trucking industry's National Traffic Committee has filed with the Interstate Commerce Commission an application for approval of an agreement covering freight classification matters and other national traffic matters of general interest to the motor carrier industry.

The request was filed under the so-called Reed-Bulwinkle amendment to the Act, which provides for antitrust law immunity for participants in collective rate-making, provided agreements are approved by the ICC and thereafter are strictly observed. At the same time, a Bulwinkle application presented on behalf of the American Trucking Association last year was withdrawn.

Principal differences between the now-withdrawn ATA application and that which is now newly-filed for the National Traffic Committee and participants in the National Motor Freight Classification, Mr. Idol said, may be summarized as follows:

(1) Only Common Carriers are parties to the National Traffic Agreement. ATA

(TURN TO PAGE 206, PLEASE)



"Now they won't be in such a hurry to pass me."

Budd Wheel Distributors

provide the same service described in this advertisement

AKRON—Motor Rim Manufacturers Co.
ALBANY—Wheels, Incorporated
ALBUQUERQUE—Wheels & Brakes, Inc.
ATLANTA—Harris Automotive Service, Inc.
BALTIMORE—R. W. Norris & Sons, Inc.
BIRMINGHAM—Cruse-Crawford Wheel & Rim Co.
BOSTON—New England Wheel & Rim Co.

Found

BUFFALO—Frey, the Wheelman, Inc.
CHARLOTTE—Carolina Rim & Wheel Co.
CHICAGO—Stone Wheel, Inc.
CINCINNATI—Rim & Wheel Service, Inc.
CLEVELAND—Motor Rim Manufacturers Co.
COLUMBUS—Hayes Wheel & Spring Service
DALLAS—Southwest Wheel, Inc.
DAVENPORT—Stone Wheel, Inc.
DAYTON—Rim & Wheel Service, Inc.
DENVER—Quinn & McGill Motor Supply Co.
DES MOINES—Des Moines Wheel & Rim Co.
DETROIT—H. & H. Wheel Service, Inc.
FARGO—Wheel Service Company
FORT WAYNE—Wheel & Rim Sales Co.
GRAND RAPIDS—Rim & Wheel Service Co.
HARRISBURG—Standard Wheel & Rim Co.
HARTFORD—Connecticut Wheel & Rim Co.
HOUSTON—Southwest Wheel, Inc.
INDIANAPOLIS—Indiana Wheel & Rim Co.
JACKSONVILLE—Southeast Wheel & Rim Co.
KANSAS CITY—Borbein, Young & Co.
KNOXVILLE—Harris Automotive Service, Inc.
LOS ANGELES—Wheel Industries, Inc.
LOUISVILLE—Auto Wheel & Rim Service
MEMPHIS—Beller Wheel, Brake & Supply Co.
MILWAUKEE—Stone Manufacturing Co.
MINNEAPOLIS—Wheel Service Co.
MOLINE—Mutual Wheel Co.
NASHVILLE—Beller Wheel, Brake & Supply Co.
NEWARK—Automotive Safety Inc.
NEW HAVEN—Connecticut Wheel & Rim Co.
NEW ORLEANS—Southern Wheel & Rim Co.
NEW YORK—Wheels, Incorporated
OKLAHOMA CITY—Southwest Wheel, Inc.
OMAHA—Morgan Wheel & Equipment Co., Inc.
PEORIA—Peoria Wheel & Rim Co.
PHILADELPHIA—Thomas Wheel & Rim Company
PITTSBURGH—Wheel & Rim Sales Co.
PORTLAND—Six Robbles, Inc.
PROVIDENCE—New England Wheel & Rim Company
RALEIGH—Carolina Rim & Wheel Co.
RICHMOND—Dixie Wheel Co.
ROCHESTER—Frey, the Wheelman, Inc.
SALT LAKE CITY—Henderson Rim & Wheel Service
SAN ANTONIO—Southwest Wheel, Inc.
SAN FRANCISCO—Wheel Industries, Inc.
SEATTLE—Six Robbles, Inc.
SOUTH BEND—Wire & Disc Wheel Sales & Service
SPOKANE—Bearing & Rim Supply Co.
SPRINGFIELD, ILL.—Illinois Wheel & Rim Co.
SPRINGFIELD, MO.—Borbein, Young & Co.
ST. LOUIS—Borbein, Young & Co.
SYRACUSE—Colbourn Wheel & Rim Service, Inc.
TACOMA—Six Robbles, Inc.
TOLEDO—Wheel & Rim Sales Co.
WICHITA—Borbein, Young & Co.

EXPORT

CLEVELAND—C. O. Brandes, Inc.

CANADA

CALGARY—Fisk Tire Service Ltd.
EDMONTON—Alberta Wheel Distributors, Ltd.
MONTREAL—General Auto Equipment Ltd.
TORONTO—Wheel & Rim Co. of Canada, Ltd.
VANCOUVER—Wheels & Equipment, Ltd.
WINNIPEG—Ft. Garry Tire Service Ltd.

CCJ News Reports

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represents all types of motor carriers, and all types are represented by members on its policy-making body, the ATA Executive Committee. (2) The members of the new National Traffic Committee are elected directly by parties to the Agreement. ATA National Traffic Committee members were formerly appointed by the president of ATA. (3) The application as now filed is an express agreement and would be executed by the carriers participating. The

previous application merely implied that such an agreement existed. (4) The new agreement will cover all essential collective action in the rate making field which is of national or general interest to the motor carrier industry, while on the other hand, last year's application filed for ATA covered only classification matters.

State Legislation

Only eleven states are meeting in regular session this year, and so there is to be much less legislative activity than in the odd years. The following are some of the high spots of interest to trailer operators.

Sizes and Weights—In Mississippi, one

bill would increase gross weight from 52,000 to 58,000 lb., and another to 76,000 lb. Two bills are also pending, however, to reduce gross weight to 30,000 lb. The Virginia legislature is considering a bill to increase gross weight from 50,000 to 56,800 lb.

Several legislatures are considering increased penalties for violation of size and weight limits. Bills in New York provide for increased penalties and authorize civil suits to recover damages caused to highways. Three bills in Virginia propose increased penalties for violations and one measure would require trucks to carry manifests showing weight of cargo.

A Massachusetts resolution would require the Registrar of Motor Vehicles to make an investigation of overloading practices, with particular reference to the feasibility of erecting scales at various points along the highways. A Mississippi bill would make it a criminal offense to detour a port of entry to avoid size and weight inspection.

Equipment—Massachusetts would require all vehicles, including passenger cars, to carry flares or fuses for use when disabled on highways at night.

Georgia defeated a proposed requirement for mudguards or splash aprons on trucks and trailers.

New York would require polarized headlamps and windshields on all vehicles manufactured after January 1, 1953. All vehicles registered after that date would be equipped with viewfinders.

The Kentucky-Tennessee Reciprocity Agreement was revised about the first of the year and now provides that if a Tennessee truck is caught overweight in Kentucky, the benefits of reciprocity are voided for that vehicle and a \$300 weight tax will then have to be paid on the vehicle to the State of Kentucky. This new provision is being strictly enforced by Kentucky authorities.

Port-of-entry legislation has cropped up again in two states. During the special session in Idaho, a measure was passed by both Houses authorizing the establishment of ports-of-entry in that State and requiring all carriers of property liable for licensing or payment of taxes, or that may be subject to inspection or grading laws, to stop at such border stations for checking. A Mississippi bill would also make it a criminal offense to detour around ports-of-entry to avoid sizes and weight inspection or payment of tax fees.


Bills to increase vehicle or driver licensing fees have been submitted in Maryland, Massachusetts, Mississippi and Virginia. In Kentucky, a bill has been introduced which would impose a \$250 annual license fee on "nonresident itinerant vendors" by motor vehicle.

Compulsory motor vehicle liability insurance and an increase in the sales tax rate on automobiles, trucks and tractors are under legislative consideration in Mississippi.

Toll road proposals are also being considered in Kentucky, Massachusetts, New Jersey and Rhode Island.

MORE NEWS

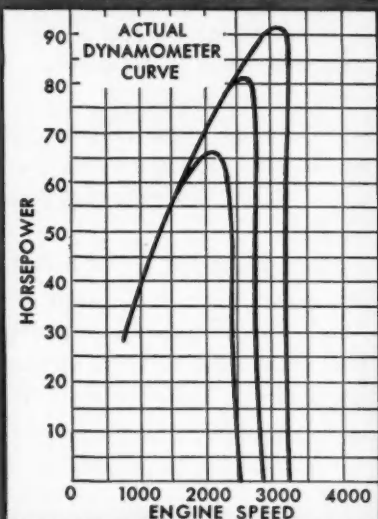
Will be found on back pages

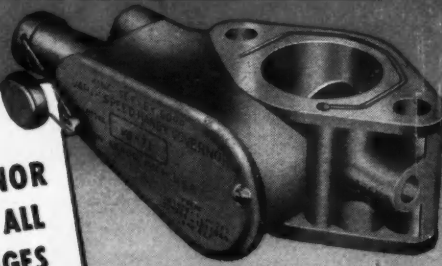



HANDY GOVERNOR

Characteristics and Advantages

- ① No-load speed control.
- ② Close regulation.
- ③ Minimum loss of horsepower.
- ④ Wide speed range with one governor model.







**NO OTHER
VELOCITY GOVERNOR
CAN GIVE YOU ALL
THESE ADVANTAGES**

KING-SEELEY CORPORATION

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PLANTS IN
ANN ARBOR
GRAND RAPIDS
YPSILANTI



"DIRT-PROOF" Prevents This—



Dirty oil clogs ring slots. It also gums valve stem guides and constricts oil passages. An AC Element removes sludge and dirt and keeps oil "Dirt-Proof."

A high percentage of the most successful fleet owners have found it thrifty to "Dirt-Proof" their engine oil with AC Oil Filter Elements.

Quality is the reason for their choice. Every AC Element is engineered for the job it has to do—and manufactured to AC's highest standards.

This uniform quality gives uniform results. Oil stays clean—valves and rings stay free—moving parts are protected against undue wear.

AC makes elements designed for *your* oil filter, which will help you to maintain the power and efficiency of your engines—and to keep maintenance costs satisfactorily low.



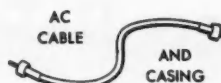
AC SPARK PLUGS



AC FUEL PUMPS



AC AIR CLEANERS



AC CABLE AND CASING



preferred on millions of vehicles

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION

New Standard Cable Coupler Proposed by ATA Equipment Committee

▼ A NEW standard jumper cable plug and socket for use on semitrailer and trailer combinations is proposed for motor carrier use by the ATA Equipment Committee working in co-

operation with coupler manufacturers, according to R. L. Hardgrove, chairman of the American Trucking Association's Equipment Advisory Committee.

The technical details of the proposed new cable plug and socket design have been worked out by a subcommittee of the ATA Equipment Committee together with engineers of the coupler manufacturers, and the details of the new standardized electric coupler are being released in order to obtain industry comments before final adoption of the new design at the May 1950 meeting of the ATA Equipment Advisory Committee.

The new coupler is one section of the overall specifications for the standardization of interline interchange semitrailers on which the ATA Equipment Committee has been working for almost 2 years. The new plug and connector will be heavy-duty units and will incorporate seven electric circuits.

Proposed specifications have been drafted in such a manner as to allow any manufacturer to construct a coupler meeting the provisions of the new specifications regardless of his method of manufacturing his plug or connector.

The seven circuits are as follows: (1) Ground return line for all units, (2) I.C.C. required marker and clearance lamps, (3) Left hand directional signal, (4) Stop lamp, (5) Right hand directional signal, (6) Tail lamp, three-bar marker lamps and marker lamps other than I.C.C. required, (7) Auxiliary circuit for items such as dome lights, lighted signs, refrigeration blowers or any other units which individual carriers may wish to use on their trailers. The reason for the separation of the circuits is that it will provide more voltage at lights at the extreme rear of long combinations to help meet requirements such as the Cal. state law that requires at least 75 per cent of design voltage at the rearmost lamp of any combination.

With these seven circuits an individual operator can leave off his trailer whatever of the above units he does not need, and still be able to interchange with his connecting carrier.

Further work is being carried out jointly between ATA and The Society of Automotive Engineers to standardize trailer jumper cables. The first step of this work has been the adoption by the ATA Equipment Committee of a color code for the seven circuits mentioned above.

This code is as follows:

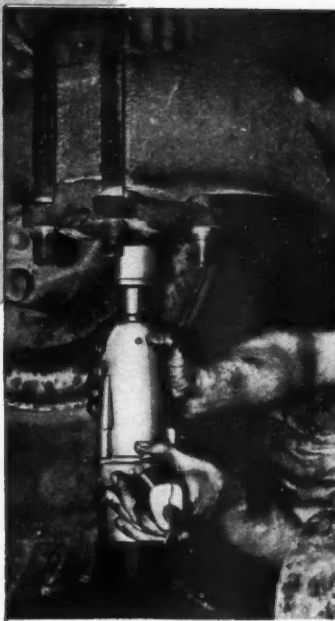
Conductor Number	Wire Color	Lamp and Signal Circuits in Conductor
1	WHITE	Ground return to tractor
2	BLACK	I.C.C. required marker and clearance lamps.
3	YELLOW	Left hand directional signal
4	RED	Stop lamp
5	GREEN	Right hand directional signal
6	BROWN	Tail lamp, three-bar marker lamps and marker lamps other than I.C.C. required.
7	BLUE	Auxiliary lamps.

MECHANICS KNOW THE DIFFERENCE!

between

THE HARD WAY

and the



Ratings

Size 4U — 3/8" bolt dia.
Size 8U — 5/8" bolt dia.

A mechanic wants and uses tools that make his job easier. Removing and running nuts is one of his most time-consuming and tiring operations. That's why the Ingersoll-Rand Electric IMPACTOOL is tops on his list of labor-aiding tools—it makes the tough jobs easy—it eliminates the kick and twist—even if the spindle is stalled completely there is no motor burn-out—and it saves as much as 90% on nut-running time.

The amazing I-R impact mechanism enables this remarkable tool to be used for many other time-consuming operations.

In fact, when you buy an Ingersoll-Rand Impactool you buy a *real multi-purpose tool*, one that is limited only by your ingenuity—Call your Ingersoll-Rand jobber or distributor and ask for a free demonstration of this amazing tool.

- Rotating Wheels
- Cylinder Heads
- Tapping
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- Oil Pans
- Screw Driving
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- Main Bearings
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ORIGINATOR OF IMPACTOOLS — air and electric

ONLY **WORLD BESTOS** gives you . . .

"BIG RED"*



the GUARANTEED **NO FADE BRAKE BLOCK**
for Trucks, Buses, Trailers in extremely
heavy duty service . . .

Plus . . . a full line of highest
quality "Job-Tested" blocks and linings for
every type of truck and commercial vehicle!



World Bestos PRESCRIBED FRICTION TRUCK SETS

Full molded segments
for heavy-duty service
requiring sizes up to
and including $\frac{3}{8}$ ".



World Bestos TRUCK GROUP BLOCKS

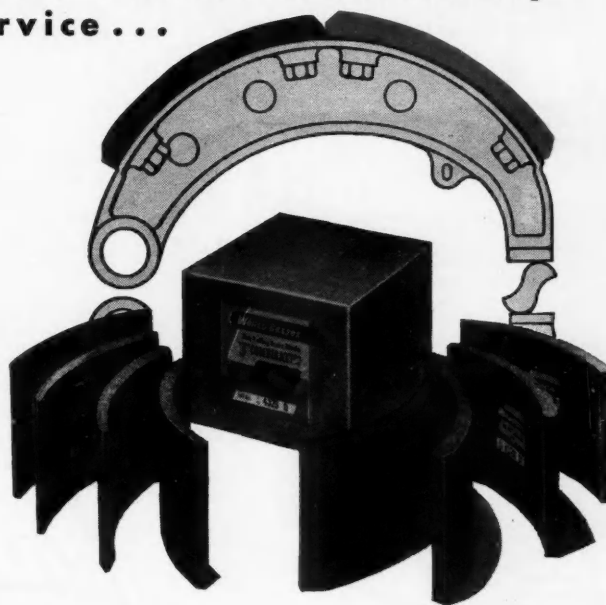
Undrilled heavy-duty
segments available in
 $\frac{1}{4}$ ", $\frac{3}{16}$ " and $\frac{1}{2}$ " thick-
nesses and varying
drum diameters for gen-
eral service on most
trucks and buses.



World Bestos BRAKE BLOCKS

$\frac{1}{2}$ " thickness and over,
for heavy-duty trucks
and buses. Available in
following World Bestos
Compounds: "Y," me-
dium friction; "E," me-
dium high friction; "D,"
medium low friction.

Write for World Bestos
Catalog.



* Sensational new **BIG RED** Block in the "J" Combination

Can't fade . . . even with most abusive use under
overload conditions. Guaranteed to eliminate glaze
. . . reduce heat-checking . . . give positive brake
action, long wearing brakes under severest condi-
tions! Not affected by heat or water.

Complete "J" Combination Sets, with installation
instructions, now available to heavy-duty truck, trailer
and bus operators. Job Tested to assure perfect per-
formance wherever service is abusive! Specify
WORLD BESTOS "J" COMBINATION for original
equipment or replacement. If local jobber cannot
supply you, write direct to World Bestos, New
Castle, Indiana.

Distributors and Jobbers:

Get your share of this profitable heavy-duty
market . . . with **WORLD BESTOS!** Write NOW!

WB

WORLD BESTOS

NEW CASTLE,
INDIANA

Factory Service

Continued from Page 14

Studebaker

Brake Squeak 6G-9G; 14A-17A; 2R5

A brake squeak that can be traced to the self-adjusting plug of the forward brake shoe on 6G, 7G, 8G and 9G Champion models and 14A, 15A, 16A and 17A Commander models and 2R5

series truck models, can be eliminated by the use of a Damper Spring, Part No. 527253. The spring is inserted between the self-adjusting plug and the web of the brake shoe at all four wheels. This change was incorporated in production on all passenger cars and 2R5 trucks beginning approximately October 1, 1949.

Engine Cylinder Block for 9G, 2R5, 2R10, 2R15

An engine cylinder block, Part No.

524824, is now available for use in either 9G Champion or 2R5, 2R10, and 2R15 truck models. The oil filler pipe holes have been plugged so that the proper filler pipe location can be selected depending upon whether the cylinder block is to be used in a passenger car or truck. The oil filler pipe is not included with the cylinder block.

If the cylinder block is to be used on a 2R5, 2R10, or 2R15 truck model, order Filler Pipe, Part No. 195978, and install in the rear filler pipe hole.

FWD

Tire Wobble

A good practical way of eliminating tire wobble is as follows:

1. Raise each wheel off the ground, one at a time, and place a straight edge quite close to the outside of the tire.
2. Rotate the wheel slowly and observe the space between the tire and straight edge to detect any existing tire wobble.
3. If the tire is out too far at any point, the wheel nuts should be tightened at that point and slightly loosened on the opposite side of the wheel if necessary. Repeat this procedure on each wheel until all the tires run true and the wheel nuts are tightened securely and evenly.

NOTE: On dual tire installations the inner tire will run true if the outer tire has been properly lined up.

A check for tire wobble should be made periodically to assure proper steering, to eliminate wheel stud breakage and for tire conservation.

END

Please resume your reading on P. 19

Co-operative Design



The combined efforts of the Freightliner Corp. and Peerless Trailer and Truck Service resulted in this rig for the Hyster Co. The COE tractor, powered by a 200-hp Cummins diesel, has an extended cab to provide a sleeper compartment. It is equipped with two heaters and insulated with fibre glass. Extensive use of aluminum including gas tanks and dual-drive rear axles has decreased weight to 13,800 lb. The 35-ft trailer has a dual axle spring suspension which is completely rubber bushed. Featured is the trussed frame, steel head board and waterproof plywood panels. The weight of this unit is 11,600 lb.

CLEAN A TRUCK IN 20 MINUTES

Model JO De Luxe

with **HYPRESSURE**

Jenny

STEAM CLEANER

- REDUCE MAINTENANCE TIME ● CUT OVERHEAD
- INCREASE PAY MILEAGE

Profit-minded fleet owners everywhere are reducing truck and bus "lay-up" time as much as 50% by Hypressure Jenny Steam Cleaning motors, chassis, parts, etc., before servicing or repair. Time saved in the shop means increased road mileage . . . greater profits.

By removing caked road dirt and grease, Hypressure Jenny Steam Cleaning lessens fire hazards . . . saves labor repair and maintenance time, and often prevents costly road failures by exposing worn or damaged parts before break-downs occur.

Besides these savings, Hypressure

Jenny cleans garages, repair shops, equipment, tools, grease racks, runways, floors, walls, windows, etc., 10 times faster than they can be cleaned by hand.

WRITE FOR THIS FREE BOOKLET

"1001 Ways to Extra Profits."

It tells how Hypressure Jenny will help you keep your fleet rolling and earning.



HYPRESSURE JENNY DIVISION

HOMESTEAD VALVE MANUFACTURING COMPANY

"Serving Since 1892"

P. O. BOX 99

CORANPOLIS, PA.

AUSCO HYDRAULIC IS *duty caliber*

Just one look will tell you that these "big guns" of the AUSCO Jack line are *every inch* HEAVY-DUTY CALIBER.

Every inch of the Hydraulic Floor Jack, with its 134-pound solid steel chassis, is built for years of exceptional lifting duty. *Every inch* of the Hydraulic Curb Jack, with its 105-pound compact steel body, is built for extra maneuverability and quick on-the-spot servicing.

For smooth, dependable lifting power, you can't beat AUSCO's Hydraulic Axle Jacks. Exclusive "in-line" valve action starts the lifting operation instantly...simultaneous with the first stroke of

the handle to eliminate all lost motion and wasted "elbow grease."

Let your helpful AUSCO Jobber show you how you these Heavy-Duty Caliber Hydraulics can help you raise the caliber of your servicing operations. He carries a complete line of AUSCO Jacks for every heavy-duty service. See him today or write for latest AUSCO Catalog.

AUTO SPECIALTIES MFG. CO., Dept CC-4, St. Joseph, Michigan
Other plants: Benton Harbor and Hartford, Mich.; Windsor, Ont., Canada

AUSCO HYDRAULIC AXLE JACK

Ram assembly easily removed for servicing... exclusive patented base for "self-aligning" of load... "instant-flow" safety release screw... piston cup made of highest quality, non-wearing material.

D-1501—1½ tons
D-1511— 3 tons
D-1521— 5 tons
D-1531— 8 tons
D-1541—12 tons



WEAR LIMITS of Axles, Brakes, Engine Parts

Continued from Page 66

CONNECTING RODS—Crankpin bearing bore and the piston pin bushing bore must be parallel with each other within .001 in. in 6 in., and the twist between these bores must not exceed .001 in. in 6 in.

ROD BORE: Must be round within .002 in. (c) Maximum out-of-round rods should not be used with maximum out-of-round crankpins.

ROD BEARINGS: Spread (width across the open ends) should exceed the rod bore diameter by .005 in. (d) to .020 in., depending on the thickness and structural stiffness of the bearings. The Ford V8 rod bearings are exceptions to this rule.

CAMSHAFT BEARINGS—After an engine has used up two sets of main and connecting rod bearings, the camshaft bearings are a potential source of trouble

due to wear and should be checked for possible replacement.

Crankshaft End Clearances

FOR THE RODS, it is sufficient to be sure that the fillet at the ends of the crank pin does not bind on the end of the crank pin bearing. A clearance of .004 in. to .010 in. is recommended.

FOR THE CRANKSHAFT, end play or clearance is recommended as follows:

CRANKSHAFT JOURNAL DIAMETER	CRANKSHAFT END CLEARANCE
2 to 2 3/4	.004 to .006
2 13/16 to 3 1/2	.006 to .008
3 1/2 plus	.008 to .010

Bearing Oil Clearances

The general rule for the size of the oil clearance, for pressure lubricated bearings, is to allow .001 for each inch of journal diameter, subject to modification depending upon the bearing metal alloy used, i.e.:

TYPE OF BEARING	SHAFT DIAMETERS	
	2" to 2 3/4"	2 13/16" to 3 1/2"
Lead and Tin Base Babbitts	.0015-.0025	.0025-.0035
Base Babbitts	.002-.003	.003-.004
Cadmium	.0025-.0035	.0035-.0045
Copper Lead		

Tolerances given by Cleveland Graphite Bronze are lower, as noted:

- (a.) Journals—.002 in.
- (b.) Bearing Saddle Bore—.001 in.
- (c.) Con Rods Bore—.001 in.
- (d.) Rod Bearings—.020 in.

Valves

Data Provided by
Thompson Products, Inc.

Valve Seat Runout

Both the seat in the block or head, as well as the face of the valve itself should be checked by means of a dial indicator for runout. The valve seat should be concentric with the guide to within .0015 to .0025 total indicator reading. The valve face should be concentric with the stem to within .0025 to .003. Bent pilots and worn guides will give false readings. Replace guides not up to standard.

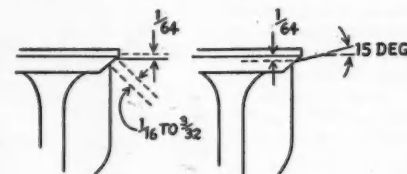
Valve Seat Width

Valve seats will vary with engine design and operating conditions. For proper seat widths, it is always good policy to go to the engine builders' manual for recommendations.

Seat widths will vary from 3/64 in. to 1/8 in. for the ordinary automotive field.

On non-rotating installations, it is preferable to stay on the narrow limits of the engine builders' recommendation. Where rotating devices are used, wider seats will show improved performance.

Recommended valve seating procedure is shown below.

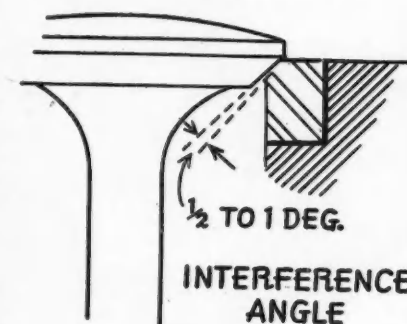


Valve Seat Angle

For satisfactory valve performance, seat angles must be perfectly matched or fitted with an interference angle.

Angles should be checked by lapping and bluing to be sure they are mated.

For interference angle fit, see sketch below.



Valve Stem Wear and Guide Clearance

STEM DIAMETER	CLEARANCE	
	Intake	Exhaust
5/16 in.	.002	.003
11/32 in.	.0025	.0035
3/8 in.	.003	.004
7/16 in.	.0035	.0045
1/2 in.	.004	.005

(TURN TO PAGE 216, PLEASE)

TESTING TESTING TESTING

Day and night, around the clock, Pennsylvania's hills are the testing ground for MOLD-BLOK brake linings and blocks.

Under actual driving conditions, in all types of weather, the testing goes on with 21,000 pounds of G.V.W. Only the most modern equipment is used to prove the correct application for every truck, trailer or bus.

It is no wonder why MOLD-BLOK is used with confidence on thousands of heavy duty units throughout the country? And is giving longer, more economical service under the most difficult conditions.

THIS IS PROVEN PERFORMANCE!

- NON SQUEAL
- LOWER COST PER MILE TO OPERATE
- UNIFORM CO-EFFICIENT OF FRICTION
- NON-SCORING OF DRUMS

MOLDED MATERIALS DIVISION

OF

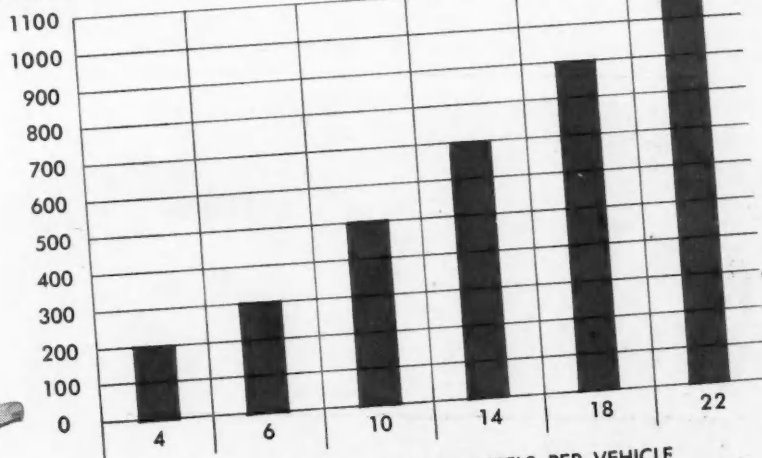
CARLISLE CORPORATION

RIDGWAY, PA.

FIGURE THE WEIGHT YOU SAVE with Alcoa Forged Aluminum Disc Wheels!



*LBS. SAVED
PER VEHICLE



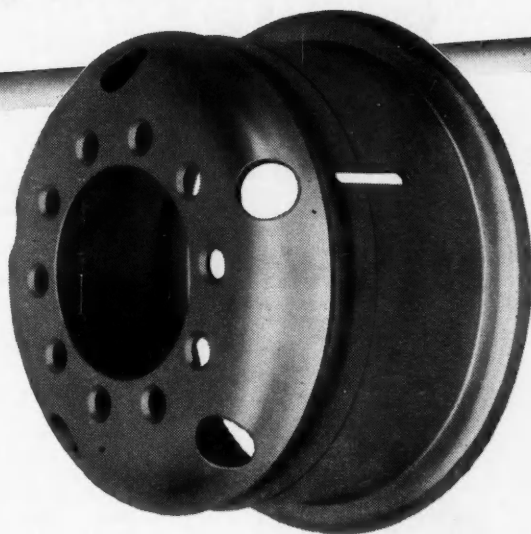
NUMBER OF ALUMINUM WHEELS PER VEHICLE

*Based on 7.50 x 22 wheels.

Weight-saving with Alcoa Forged Aluminum Disc Wheels adds up fast—and it's all *unsprung weight*! Each Alcoa Wheel weighs 32 to 50 lbs. less than a steel wheel. By specifying these light, strong wheels, you can save as much as 1,100 lbs. per vehicle—and add it to payload capacity.

Alcoa Forged Disc Wheels are precision-made to run true. Tire temperatures are lower, because the aluminum discs dissipate heat rapidly. Maintenance is almost nil. Wheels require no painting. Ordinary washing keeps them bright and attractive.

Ask your truck or trailer builder for facts and figures on Alcoa Forged Aluminum Disc Wheels. Available in 7.50 x 20 and 7.50 x 22 sizes.



Send for free booklet!

Gives full information on Alcoa Forged Disc Wheels—advantages, specifications, installation data. Write to ALUMINUM COMPANY OF AMERICA, 1870D Gulf Building, Pittsburgh 19, Pennsylvania.



ALCOA

FORGED ALUMINUM DISC WHEELS



INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS
ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS

Wear Limits

Continued from Page 214

If wear develops to a point where the clearance is 50 per cent greater than the specified maximum, replacement of the worn parts is recommended. (Wear readings should be taken at maximum bell mouth or taper.)

Valve stem warpage, up to .003 maximum indicator reading, is permissible. Wear on stem tip up to 1/32 in. is usually permissible.

Recommended Press Fits

O.D. OF SEAT INSERT	DEPTH OF INSERT					
	1/4-3/4		3/8-9/16		9/16-11/16	
	Max.	Min. Desired	Max.	Min. Desired	Max.	Min. Desired
1 in.—2 in.	.004	.002 .003				
2 in.—3 in.			.005	.003 .004		
3 in.—4 in.					.006	.004 .005

Valve Springs

Valve springs should always be checked for tension on any accurate testing device. Springs, having a compression reading 10 per cent below the low limit specification, should be replaced.

Installations, where the valves have been lowered on the seat due to grind in the installed spring height, should be checked.

Variations in excess of .020 should be taken up with washers to keep spring pressures in the proper range.

When springs are removed, it is good practice to thoroughly clean them and examine the wire surface. Any signs of corrosion would indicate that they should be discarded.

Valve Seat Inserts

For best performance, the recess for valve seat inserts should be bored smooth, square and flat on the bottom.

The sizes should be measured accurately to give the interference fits as shown here. Too much press fit causes just as much trouble as too little. Likewise, accuracy is a prime requisite.

Service Brakes

Information provided by U. S. Asbestos Div. of Raybestos-Manhattan, Inc., and Thermoid Co.

The following working limits for better operation and care of Lockheed, Huck, Bendix and Two-shoe cam operated brakes, are recommended:

Brake Drums

Do not cut drum wall on cars, light trucks, heavy trucks and busses more than 20-25 per cent of manufacturer's original thickness. When drums are heavily loaded, caution should be used in cutting down drum thickness due to squeal and distortion problems. Thickness refers to drum body only and does not include flanges or ribs. Drums should be discarded if deflection in diameter is more than .060 in. under full brake application. Diameter should be concentric with hub within .010 in.

SURFACE—Refinish if heat checked or scored more than .010 in. deep.

TAPER—Refinish if barrel shaped or bell-mouthed more than .010 in.

SHIM STOCK or oversize lining should be used to compensate for material removed from drums.

Brake Shoes

ANCHOR ENDS—Bendix shoes should be repaired or replaced if anchor radius is enlarged or bent.

RIM—Shoes should be repaired or replaced if rim is out of round, out of square or distorted.

WEB—Shoes should be repaired or replaced if rim to web weld is broken as this causes excessive rim flexing resulting in uneven lining wear.

ROLLERS—Discard rollers that are worn, particularly if a flat spot is present on outside. Discard cam follower plates if grooved by the cam more than .015 in.

Bushings

ANCHOR BUSHINGS should be replaced if worn more than .008 in. Anchors should be fitted and bushings accurately reamed.

Anchors

PINS: Anchor pin on the Huck brake is non-adjustable type, renew anchor if worn more than .008 in. On the two-shoe cam operated brake and the Lockheed brake, renew anchor pins, or rebush shoes if worn more than .008 in.

Links

ARTICULATING LINKS must be rigid and hold the shoes without side play. Examine buttons and button springs and renew if bent or worn. Applies to Huck brake only.

Springs

All weak pull back springs should be replaced.

Cam

On the two-shoe cam operated brake, camshaft should be renewed and bracket rebushed if worn more than .025 in.

Backing Plate

Repair or replace warped, bent or loose backing plates. Lubricate backing plate ledges.

Hydraulic Systems

WHEEL CYLINDERS—Dismantle and examine at each relining or if leaks are present. Renew pistons if scored, sticking or worn more than .005 in. Cylinder walls should be honed if scored. If, after honing enough to remove all scores, the "no-go gauge" will enter, wheel cylinder should be replaced. Renew all rubber cups.

Master Cylinders

CHECK VALVE—Residual line pressure should be 7 to 12 lbs. per sq. in. Renew check valve if spring is rusty or seats are worn in spring type, or if rubber cup or rubber seat are worn or distorted in metal cage type.

PRIMARY AND SECONDARY CUPS—Replace cups if distorted or edges are rounded.

MAIN SPRING—Replace spring if weak or rusty.

PISTON—Renew if scored or worn more than .005 in. Make sure ports and filler cup vents are open.

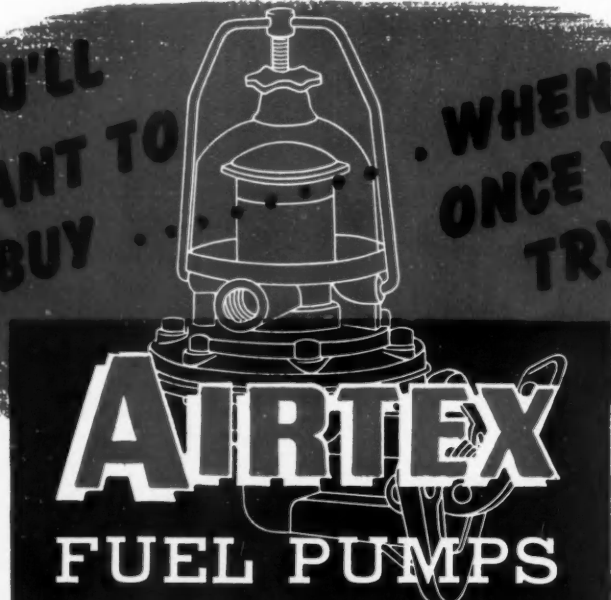
CYLINDER WALLS should be honed if scored. If, after honing enough to remove all scores, the "no-go gauge" will enter, master cylinder should be replaced.

Brake Lining

LINING should be replaced when worn within .010 in. of rivet head on passenger cars and light trucks and within 1/32 in. of bolt head on heavy trucks and busses. In the case of bonded linings, which are rapidly coming into the picture, lining should be replaced when worn to a minimum of .020 in.

(TURN TO PAGE 218, PLEASE)

YOU'LL WANT TO BUY... WHEN ONCE YOU TRY



AIRTEX
FUEL PUMPS

PERFORM Better... Longer!

AIRTEX

Anti-Pulsation
FUEL FILTERS
with the
SHOCK ABSORBER
DIAPHRAGM



- Protects carburetor needle valve and float lever against wear
- Makes frequent carburetor adjustments unnecessary
- Gives smoother operation at idle and low speeds

50,000-MILE GUARANTEED DIAPHRAGM

- Won't crack, puncture, become porous or brittle
- Stays flexible through engine heat and fumes
- Withstands —35° temperature without stiffening
- Means quicker starting, less battery drain, fewer stalls, faster get away, longer life.



PATENTED VALVE CAGE ASSEMBLY

- Eliminates internal gasket — prevents leakage caused by gasket wear
- Gives perfect seal between valve and body
- Provides instant, ample fuel flow to carburetor without back tracking





YOU CAN'T LOSE! IN BONNEY'S \$5000.00 MECHANICS' JACK-POT

THE EASIEST WAY TO MAKE MONEY
YOU EVER HEARD OF!

1507
PRIZES

The MECHANICS' JACK-POT is a different kind of contest. Absolutely *no purchase* is required to enter—*no box tops*, *no coupons*. (You don't even have to be an owner of Bonney Tools!) All you have to do is complete this sentence in 25 words or less:

"I PREFER BONNEY TOOLS BECAUSE..."

Your chance of winning is every bit as good as the next fellow's. Just read the rules, complete the entry blank attached to this ad, and mail it to MECHANICS' CONTEST, BONNEY FORGE & TOOL WORKS, P. O. BOX 831, ALLENTOWN, PA. The important thing is to *send in your entry now*.

READ THESE RULES CAREFULLY

1. The contest is open to all mechanics and mechanics' helpers in the continental United States.
2. The following are *not* eligible: employees of Bonney Forge & Tool Works and members of their immediate families; employees of any Bonney sales organization, distributor or jobber; employees of the Bonney Forge & Tool Works' Advertising Agencies.
3. All entries must be postmarked *not earlier than March 1, 1950 and not later than May 31, 1950*. Address your entry to: Mechanics' Contest, Bonney Forge & Tool Works, P. O. Box 831, Allentown, Pa.
4. The entries will be judged for originality and aptness of thought. Duplicate prizes will be awarded in case of ties. The decision of the judges will be final. Entries will not be returned, and all become the property of Bonney Forge & Tool Works.

NO COUPONS
NO BOX TOPS
NO CATCHES

...GET IN THE CONTEST EARLY

5. Contest winners will be notified by letter no later than June 30, 1950. Winner lists will be available on request to contestants who send in stamped, self-addressed envelopes.
6. Each contestant is limited to *one entry*. If more than one is sent in, only the first entry received will be considered.

YOU CAN WIN ONE OF THESE BIG PRIZES

First prize.....	\$1000.00	Fourth prize.....	\$100.00
Second prize...	500.00	Fifth prize.....	50.00
Third prize.....	100.00	Sixth prize.....	50.00
		Seventh prize.....	\$50.00

... PLUS 100 prizes of \$15.00 Tool Purchase Certificates

... PLUS 400 prizes of \$11.00 Zenel Open End Wrench Sets

... PLUS additional prizes of Bonney Tie Clasps for the next 1000 best entries.

ENTRIES MUST BE POSTMARKED NOT LATER THAN MAY 31st

OFFICIAL ENTRY

BONNEY FORGE & TOOL WORKS
P. O. Box 831, Allentown, Pa.

MECHANICS' JACK-POT CONTEST

"I prefer Bonney Tools because....."

.....
.....
.....
.....

NAME.....

Street..... City..... State.....

I work at.....

My Bonney Jobber is.....

In order to help your Bonney Jobber Salesman participate in this contest, ask him to help you with your entry statement and, if he does help you, enter his name here.....

BONNEY
TOOLS

BONNEY FORGE & TOOL WORKS

ALLENTOWN, PENNSYLVANIA

Eaton Front and Rear Axle

The axle division of Eaton Mfg. Co. has submitted valuable information on wear limits for its line. The data covering both front and rear axles will be found in the table below.

Dimensions given are a fair average of the entire line

PARTS	SPECIFIED FIT OF CLEARANCE	SERVICEABLE AFTER WEAR
Gear mesh, bevels—backlash	.008 to .015	.018
Herringbone mesh—backlash	.010	.015
Gear mesh—differential backlash	.010 max.	.015
Bearing fit—cones where free—Pinion End	.001 loose to .005 tight	Loose—.002
Bearing fit—cones where free—Housing Tube	.0002 to .0017 loose	Loose—.002
Bearing fit—cones where free—Front Axle inner wheel brg.	.0005 to .0015 loose	Loose—.002
Bearing fit—cones where free—Front Axle outer wheel brg.	.0005 to .002 loose	Loose—.003
Bearing fit—cups where free—Diff. Brgs. L.H. and R.H. Side	.005 tight to .0015 loose	.002
Differential side pinion and spider	.002 to .004 loose	.006
Side gear in differential case	.004 to .007 loose	.009
Internal gear idler pinion and pins	.0045 to .0065 loose	.009
King pin fit in I-beam	.000 to .0015 loose	.002
King pin fit in Knuckle bushings	.0005 to .002 loose	Loose—.003
Differential washers back of gear	.002 loose to .006 loose	Loose—.010

Wear Limits

Continued from Page 216

Brown-Lipe Clutch

Pressure Plate

Maximum free movement in driving slots—.015
Maximum fulcrum wear—1/32
Maximum depth of scores which permit salvage by re-grinding—1/16
Maximum depth of scores permitting reinstallation without grinding—.005
Maximum out-of-flat permissible without regrinding—.007

Levers

To be scrapped if contact areas are pitted or grooved.

Release Sleeve

To be scrapped if total wear where levers contact is over—1/32
Clearance between bushing and shaft—maximum—.007

Spring

Per cent load loss permissible before scrapping—20%

Driven Plate

Replace if oil or grease on surface.
Replace when worn to rivet heads.
Replace if burned.
Maximum play in disc splines measured at periphery—1/8
If excessive spline wear occurs, check alignment between transmission and engine.
Maximum free play at periphery due to damper parts—1/16
(Scrap disc if more)
Permissible warpage:
(Use indicator) face runout—.010

Cover (Flywheel Ring)

Maximum total freedom of pressure plate in slots—.015

Release Bearing

Grease—High Temperature—B. & RB.
Adjustment—by turning castellated adjusting ring to correct free pedal travel.

Clutch Release shaft

Maximum play in bushings—.015

END

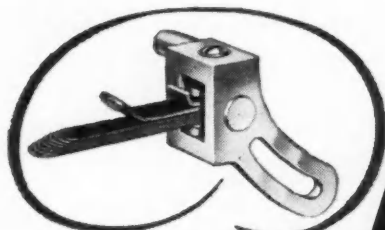
Please Resume Your Reading on P. 67

OUT OF SIGHT...
but definitely
under your
control!



When your vehicles are Hoof equipped, you **KNOW** how fast they're travelling—just as surely as if your foot rested on each accelerator!

By positively controlling high-gear speed as well as preventing excessive engine racing in low gears, Hoof Governors drastically reduce fleet operating costs, reduce insurance premiums, reduce accident hazards. Write us for complete information.



A Patented, exclusive Hoof feature, this Cantilever Spring means more accurate speed control, simplified construction and longer life!

HOOF key and seal type
GOVERNORS

HOOF PRODUCTS CO.
6543 S. Laramie Ave., Chicago 38, Ill.

Sterling Cab-Forward



Designed primarily for those operations requiring reduced overall lengths, this Sterling TE cab-forward truck has its engine projecting part way into the cab assembly. The front axle is therefore located farther forward in relation to the cab. The engine housing, which is easily removed, is well insulated from the cab. Featured is an adjustable steering column which enables the wheel to be set in any position comfortable to the driver.

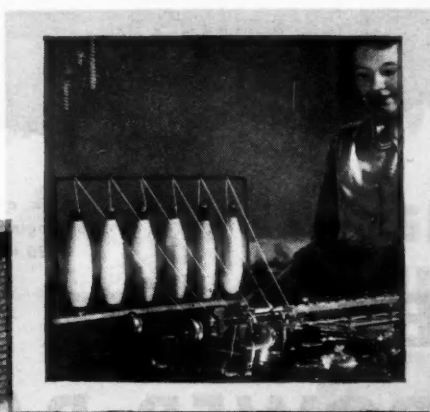


UNIFORMITY

Makes the Big Difference

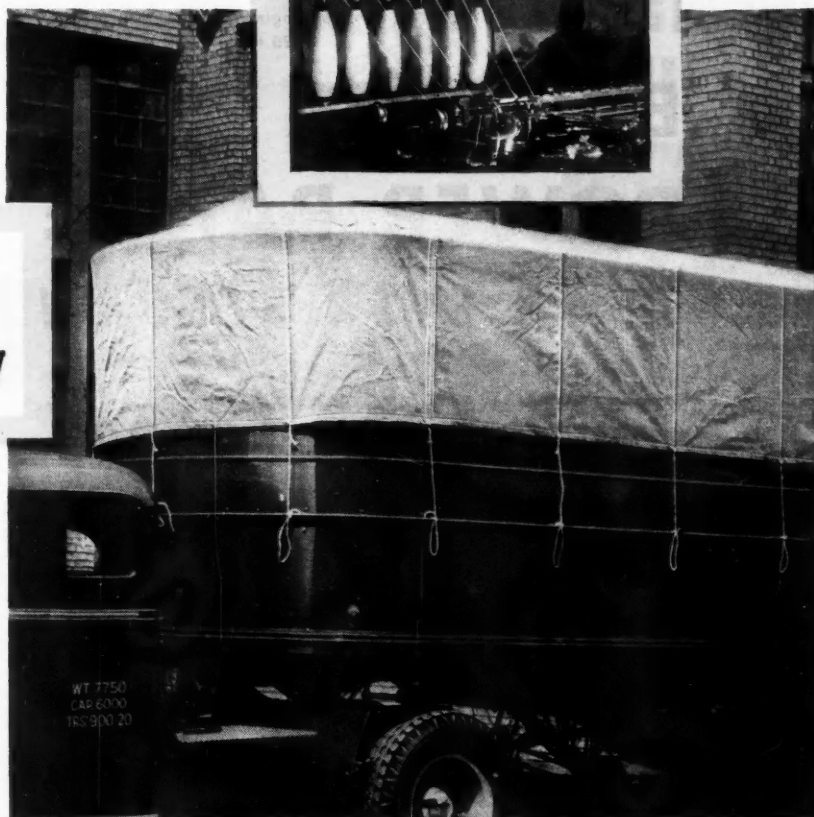
In TRUCK COVER Fabrics

TESTING STRENGTH AND ELONGATION OF YARN WITH MOSCROP TESTER. This unit automatically tests 6 strands of yarn at one time. One of a series of comprehensive laboratory controls throughout production to assure fabric uniformity in all Mt. Vernon-Woodberry products.



Gives You
Greater Fabric Uniformity

The greater uniformity of Mt. Vernon Extra Duck—the straight, smooth, weather-tight seams made possible by its even selvages — mean added cargo protection, longer wear, lower repair and replacement costs.



Mt. Vernon-Woodberry

Branch Offices: Chicago • Atlanta • Baltimore • Boston • Los Angeles

TURNER HALSEY

COMPANY

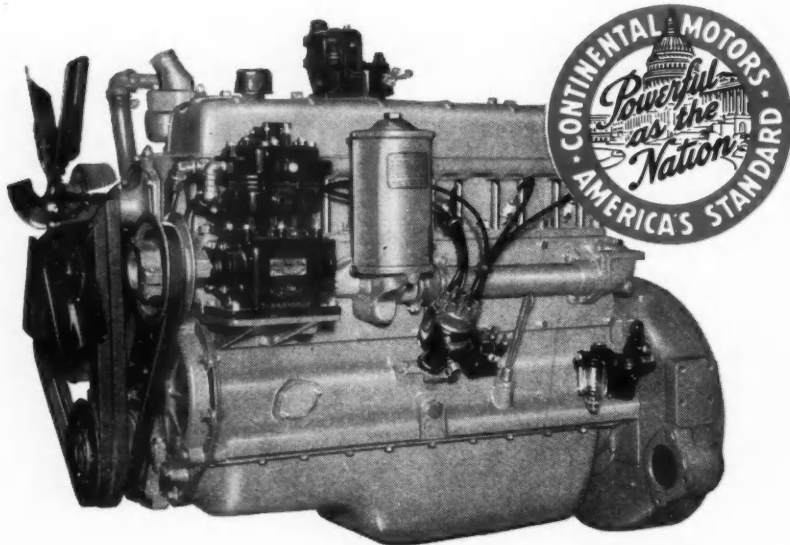
Selling Agents

40 WORTH ST. - NEW YORK

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Akron

CONTINENTAL RED SEAL ENGINES



MODEL T-6427

Six cylinder, overhead valve
engine for trucks and buses.
126 to 146 h.p. at 2600 r.p.m.

NOW COVER A

**BROADER
POWER RANGE
THAN EVER BEFORE!**

Continental Motors has not only embodied in Red Seal engines numerous improvements developed since the war, but has also substantially broadened an already diversified line. That line now comprises more than 100 different models from 1½ to 270 horsepower, for transportation, industrial, and agricultural use—each engineered to do one job, and do it supremely well. As a result, the manufacturer—and the user—of everything from a lawn mower to a heavy-duty highway tractor will find in the Continental line one or more models precisely matching his need. This tailoring of the power plant to the work to be performed is the best possible assurance of satisfaction over the years.

Write for free bulletins on Continental Red Seal engines. Kindly mention application you have in mind, and approximate power required.

Continental Motors Corporation

MUSKEGON, MICHIGAN

AASHO Standards

Continued from Page 121

4. Speed: (a) Minimum speed. No motor vehicle shall be unnecessarily driven at such slow speed as to impede or block the normal and reasonable movement of traffic. Exception to this requirement shall be recognized when reduced speed is necessary for safe operation or when a vehicle or combination of vehicles is necessarily or in compliance with law or police direction proceeding at reduced speed.

(b) Maximum speed: No truck shall be operated at a speed greater than 45 mph. Passenger vehicles may be operated at such speeds as shall be consistent at all times with safety and the proper use of roads.

(c) Vehicles equipped with solid rubber or cushion tires shall be operated at a speed not in excess of 10 mph.

5. Permissible Loads: (a) No axle shall carry a load in excess of 18,000 lb. (Note: An axle load shall be defined as the total load transmitted to the road by all wheels whose centers may be included between two parallel transverse vertical planes 40 in. apart, extending across the full width of the vehicle.)

(b) No group of axles shall carry a load in pounds in excess of the value given in the following table corresponding to the distance in feet (col. a.) between the extreme axles of the group, measured longitudinally to the nearest foot:

(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
4	32,000	17	41,160	31	53,490	44	63,890
5	32,000	18	42,080	32	54,330	45	64,650
6	32,000	19	42,990	33	55,160	46	65,400
7	32,000	20	43,900	34	55,980	47	66,150
8	32,610	21	44,800	35	56,800	48	66,890
9	33,580	22	45,700	36	57,610	49	67,620
10	34,550	23	46,590	37	58,420	50	68,350
11	35,510	24	47,470	38	59,220	51	69,070
12	36,470	25	48,350	39	60,010	52	69,790
13	37,420	26	49,220	40	60,800	53	70,500
14	38,360	27	50,090	41	61,580	54	71,200
15	39,300	28	50,950	42	62,360	55	71,900
16	40,230	29	51,800	43	63,130	56	72,590
		30	52,650			57	73,280

(c) The maximum axle and axle-group loads recommended above are subject to reasonable reduction in the discretion of the appropriate highway authorities during periods when road subgrades have been weakened by water saturation or other cause.

(d) The operation of vehicles or combination of vehicles having dimensions or weights in excess of the maximum limits herein recommended shall be permitted only if authorized by special certificate issued by an appropriate State authority.

Easy Does It



Operated from control on the dash, installation of twin-cylinder hydraulic hoist, manufactured by the National Truck Equipment Co., converts Willys pick-up into a dumper

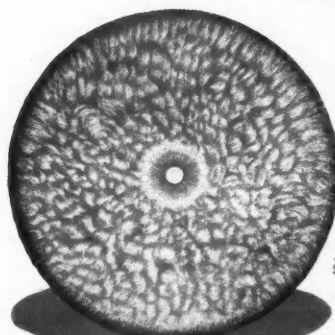


NOW No unbalanced
operation—no swirls—
just **EXCEPTIONAL**
POLISHING

Speed . . ease . .
reduced costs . .

greater profits in polishing, rubbing and waxing
with

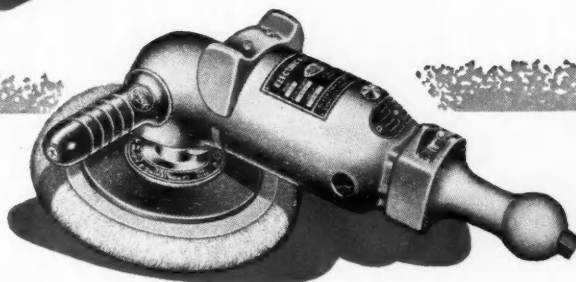
Sioux **POLISHING**
UNITS



SIoux Polishing Pad
No. 1211

Deep, thick, tough, long lasting wool nap. Strong canvas back. Hole in center for centering and clamping on holder—eliminates unbalanced operation and swirls—special feature. A wonder on patch work, blends new with old, completely hiding patch. Produces a superior finish on all polishing, rubbing or waxing.

No. 843 Wool Bonnet same as No. 1211 except bonnet type.



SIoux Electric Polisher

No. 1200 gives correct speed—long life—dependable service. For easy and quick results get SIoux.

Permanently lubricated—115 Volt A.C., D.C. Motor. Comes complete and ready to go to work.



SIoux Auto Polish

For machine or hand polishing. Quickly cleans all surfaces and polishes in one operation. Restores original finish without injury to it or fine striping. Contains no injurious ingredients. Our own scientific formula—based on years of research.

Sold Only Through

Authorized SIoux Distributors

STANDARD THE
ALBERTSON & CO., INC.



WORLD OVER
SIoux CITY, IOWA, U. S. A.

New Product Descriptions

Continued from Page 49

P103. Saddle Tank

The 1950 Model Cylsad—combination cylinder-saddle tank consists of two complete cylinder tanks joined together with a rugged saddle section. This standard tank combination includes gage ports for Stewart-Warner gages if desired. Diesel engine fuel line connections are provided, making it pos-

sible for a distributor to supply the Cylsad for diesel operation without carrying multiple stocks.

The tank combination can be filled from either side. Safety valve is included in each cap together with fusible element area for additional safety. The unit is available in 85, 105, 125, 145, and 180-gal capacities. The Lintern Corp., Berea, Ohio.

Factory Installed

At "factory installed" prices you get this Bostrom Hydraulic Seat, the ultimate in truck seating, at lowest cost.

In These Trucks:
International • GMC
Diamond T • Peterbuilt • Dart
Federal • Walter • Oshkosh • Duplex
Ward La France • Coleman • Reo
Hendrickson • Sterling
Available • FWD

BOSTROM



HYDRAULIC shock absorber and suspension mechanism of the Bostrom seat soak up jolts and jars. Steel frame and bonded rubber pad last the life of the truck. Mechanism moves in rubber—requires no oiling. Fore and aft adjuster accommodates all drivers. Seat coverings are replaced in 10 minutes—eliminating upholstery jobs.

For truck part numbers consult
your truck dealer or write:

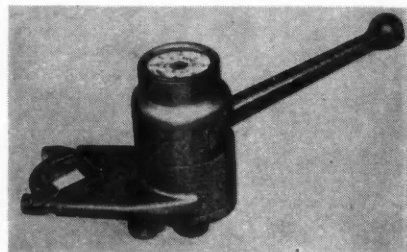
BOSTROM MFG. CO.

Milwaukee 4, Wisconsin

Costs a little more
at the start...
costs a lot less in
the long run.

P104. Hand Control Valve

A vacuum-suspended type hand-control valve, for steering post installation incorporates a single poppet valve with a resilient valve seat face. It provides a leak-proof action and insures positive graduation and settings. The



operating cam bearing surfaces are faced with hardened steel. The valve assembly is protected from dust by a built-in air cleaner.

The optional vacuum gage is located on top, within easy view of the operator. When the gage is supplied, it is an integral part of the valve housing. Bendix Products Div., Bendix Aviation Corp., South Bend, Ind.

Late Product Flashes

A head cutter that cuts the head of any size steel drum in approximately one min, recently introduced by Michael A. Schinker Co., Chicago, Ill.

Exhaust fans, 16-in., 20-in. and 24-in. sizes, featuring large capacity for each blade size, developed by the Baldor Electric Co., St. Louis, Mo.

Korodicators, designed to eliminate the corrosion formed on battery posts, now manufactured by the Korodicator Div. of the Knight Machine and Tool Corp., Cleveland, Ohio.

The Yankee No. 235 truck fender mirror with diminishing glass, introduced into the complete line of automotive safety equipment of the Yankee Metal Products Corp., Norwalk, Conn.

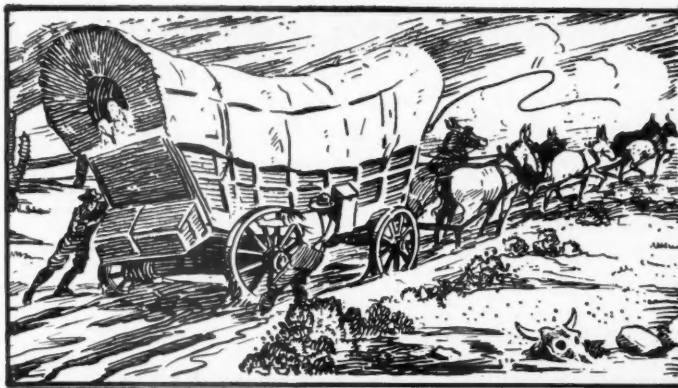
A new type lineless replacement oil clarifier for use on buses, trucks and tractors equipped with base-mounted oil filters, developed by W.G.B. Oil Clarifier, Inc., Kingston, N. Y.

A new assortment of water pump gaskets added to the line offered by the McCord Corp., Detroit, Mich.

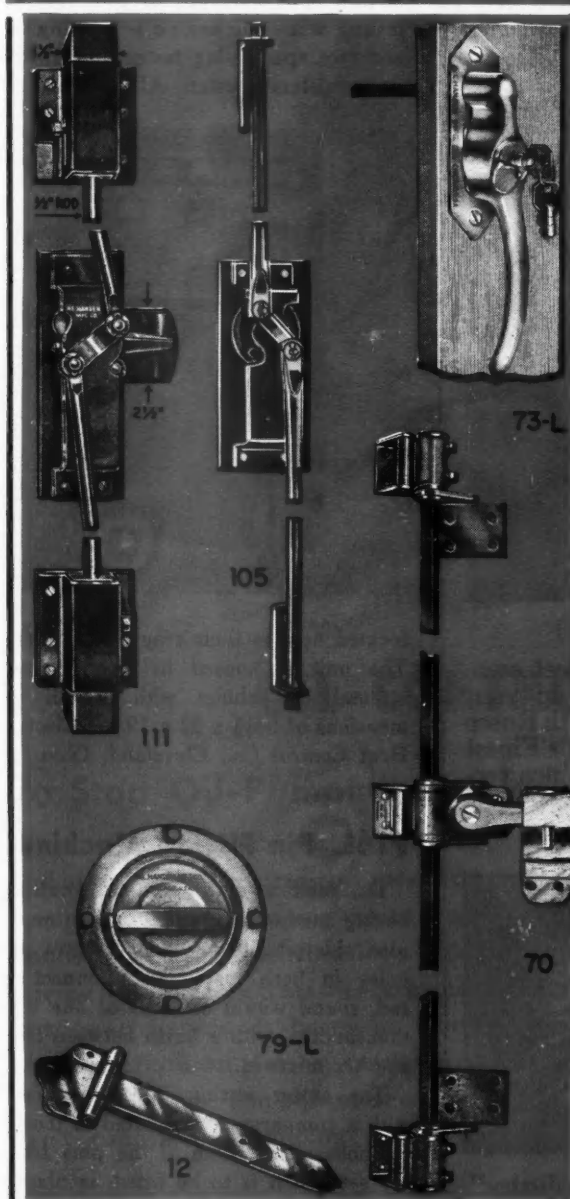
Three models of bench and hand tubing benders, covering a range from 1/4 in. to 1 1/4 in., offered by the Republic Mfg. Co., Cleveland, Ohio.

P105. Ignition Cut-Off

A new, fully-automatic ignition cut-off switch, shuts off truck, bus, taxicab, and other vehicle engines after two minutes' idling; thus saving gas and
(TURN TO PAGE 224, PLEASE)



MILESTONES of PROGRESS



BACK in the "early days"—1920—Hansen made only a few designs in locks, hinges, handles and regulators. Now—a full thirty years later—the Hansen Line is complete — varied to suit every body-building requirement.

Tanks, trailers, buses, bodies—from coast to coast—pile up mileage and carry their loads, safely, speedily — with doors fastened securely against loss or theft. Most of them are Hansen-equipped.

Always the "preferred" hardware, because of its simple design, ruggedness, durability, ease of application — Hansen has stood the test of service and of progress thru the years.

If you are a custom body builder or designer; if you are a fleet owner or operator and have a body building specialist build your bodies, tanks, trailers or buses—it will pay you—in longer service, fewer repairs or replacements — to specify and use **HANSEN!**

Specifications for Items Shown

No. 12 Leaf-Type Hinge. Size, 12" strap, 2 1/4" wide. Three-ply. Steel. Hardened bearings.

No. 70 Lock. Lug-leverage compresses doors tight shut. Std. rod, 48", 5/8" square. Right- or left-hand.

No. 73-L Locking Handle. Tamper-proof, 5/16" square bushing and shank. Handle, 7" long; 4 1/4" grip.

No. 79-L Handle. Fits flush. Round recess to prevent "barked" knuckles. 6 3/16" wide. Flange, 3/4", 4 1/2" recess.

No. 105 Lock. For doors up to 5 1/2". Rattle-proof. Two rods, 30" long, 3/8" dia. Center, 2 1/2" wide, 6 1/4" long.

No. 111 Lock. Heavy duty. Center bolt, 2 1/2" wide. Top and bottom bolts, 1 1/2" wide with 1 1/2" travel. Rods, 1/2" dia.

A. L. HANSEN MFG. CO.

5047 RAVENSWOOD AVE. CHICAGO 40, ILL.



New Product Descriptions

Continued from Page 222

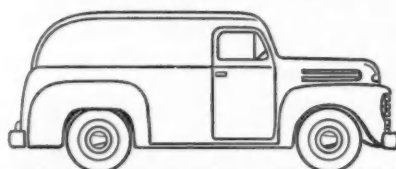
reducing maintenance. It also prevents carbon monoxide poisoning which occurs when driver sleeps while engine is idling. A safety feature is the built-in "tilt-switch," that helps prevent fires by instantly cutting the ignition if vehicle is ditched or turned over.

This switch goes into operation only when accelerator is at full-off position.

This permits driver to idle engine for warmup or other necessary reasons, but only when he remains in cab to step on accelerator at intervals. The unit is pre-set at the factory for two minutes' idling time, but can be re-set by a mechanic to allow for any desired idling period. Transportation Safety Appliances, Inc., Chicago, Ill.

Now Rusco *Fused Fabric* Brake Lining is available for...

FORD and



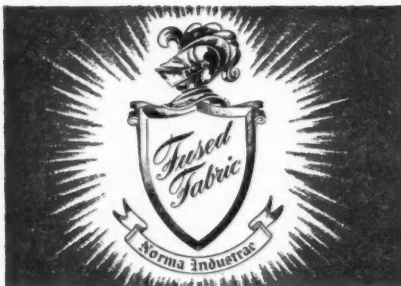
¾ ton to 2 ton

CHEVROLET



¾ ton to 2 ton

Here's good news for fleet owners! Now you can equip your Fords and Chevrolets with Rusco *Fused Fabric*, the World's Finest Brake Lining! Performance records prove Rusco *Fused Fabric* superiority.



"The Standard of the Industry"

THE RUSSELL MANUFACTURING COMPANY

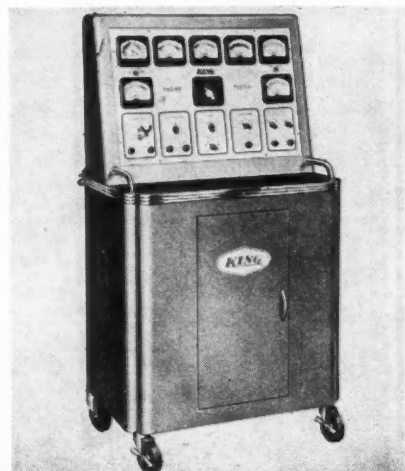
Middletown, Conn.

P106. Brake Reliner

An all-purpose heavy-duty brake reliner features a double column with separate delining and riveting stations, as well as a foot-operated driller and swivel driller grinder. This machine has a riveting throat 7-in. deep and is equipped with 6½-in. or 7½-in. rubber-cushioned abrasive. Chicago Rivet & Machine Co., Bellwood, Ill.

P107. Engine Tester

Designed for use on 6, 12 and 24-volt ignition systems, the MT-830 King System tester features well illuminated meters, provisions for over-all ignition testing while the engine is running, an accurate spark plug tester and a volt-amp-resistance tester. All controls are



located next to their respective meters. The unit is housed in an attractive streamlined cabinet with overall dimensions of 56½ x 32 x 19 in. Electric Heat Control Co., Cleveland, Ohio.

P108. Pin Fitting Machine

Designed to employ the fly cutting boring method for the fitting of wrist pins, this pin fitting machine bores pin holes in both piston and connecting rod, round within one-half of one ten-thousandths, with a finish between four and six micro-in.

The cutter setting is accomplished with a comparator, graduated in tenths of thousandths. One of the pins from the set which is to be fitted, is placed in the chrome-plated vee of the comparator and the knurled knob set at zero. The pin is then removed. The boring bar, with the cutter locked with a friction lock, is then placed in the vee.

(TURN TO PAGE 226, PLEASE)

SELF-CONTROL STARTS HERE



AND TO RESTORE
ENGINE PERFORMANCE

OIL-CONTROL STARTS HERE

To Stop Oil-Pumping, Replace Worn Engine Bearings

When an engine is sluggish on pick-up and always seems to drag that means oil pumping—and oil pumping means worn connecting rod and main bearings. Worn engine bearings let excess oil reach combustion chambers. It burns to motor fouling carbon on pistons, spark plugs, valves and rings. The best of new rings can't control oil pumping caused by

worn bearings. Correction starts where the trouble starts. Always check for and replace worn bearings. To restore power, pep and economy, replace in sets with Federal-Mogul Oil-Control Bearings. They are engineered for the job!

FEDERAL-MOGUL SERVICE

(Division of Federal-Mogul Corporation)

DETROIT 13, MICHIGAN



control oil-pumping where it starts—REPLACE WITH

FEDERAL-MOGUL



BEARINGS

New Product Descriptions

Continued from Page 224

The cutter is then forced out to the proper reading to accomplish a cut with the specified clearance, or press fit, for the particular job. All centering and holding is accomplished with regulator controlled pneumatic pressure, and the feed is actuated by air and stabilized by oil.

The Tobin-Arp Mfg. Co., Minneapolis, Minn.

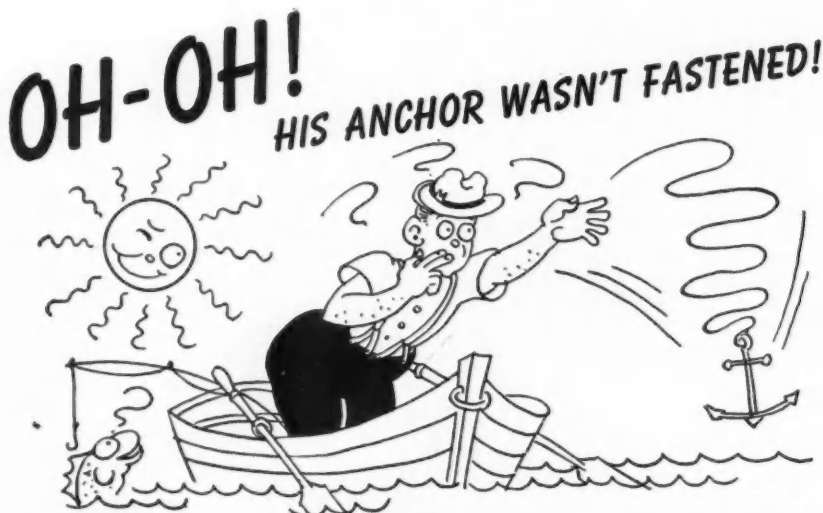
P109. Hand Truck

The Tricart, a light-weight tubular steel hand truck complete with adjustable tripod support and leverage plate. Weighs but 27 lb, and will handle loads up to 600 lb, because of the added strength supplied by the tripod support. Loads are broken back by stepping on the end of the leverage plate.

The telescoping tripod is adjustable instantly to any position for maximum ease of wheeling. The entire third wheel assembly can be folded completely out of the way, to permit use of the truck as a two-wheeler, whenever desired. Melooz Mfg. Co., Los Angeles, Cal.

P110. Brake Shoe Sander

Model BSU brake shoe sander removes old bonded lining rapidly, trues the shoe, and leaves a bright clean surface with the correct degree of

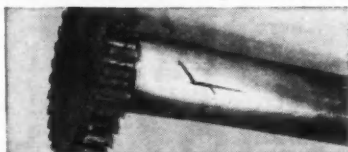


He's the Type Who Would Complete an Overhaul Job WITHOUT MAGNAFLUX* INSPECTION

ANCHOR LOST! FISHING SPOILED! It happens often but *shouldn't* happen to you. Neither should drive shaft, steering, or block failure or structural failure of any other part occur shortly after you complete an overhaul job. Failure

doesn't occur when fast, non-destructive Magnaflux inspection is used to check every part.

Leading railroad shops and aircraft overhaul stations use Magnaflux regularly. And so do many bus and truck operators.



Invisible to the naked eye, this otherwise invisible fatigue crack in bus drive shaft shows up clearly as shown here under Magnaflux inspection. Undetected it could have failed completely shortly after overhaul.



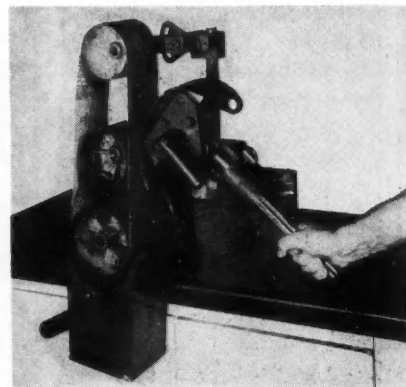
Magnaflux inspection shows clearly the area, size and shape of defects in these connecting rods. Without Magnaflux inspection the entire overhaul would have to be redone within a few days or weeks.

Write today for complete information about Magnaflux inspection and how it can save you time and money on overhaul jobs. Be sure to check on the shop convenient to you, who can Magnaflux your mechanical parts during overhaul.



* Magnaflux—Reg. U. S. Pat. Off., Trade Mark of the Magnaflux Corporation applied to its equipment and materials for magnetic particle inspection.

MAGNAFLUX CORPORATION
5908 Northwest Highway, Chicago 31, Illinois
New York • Cleveland • Detroit • Dallas • Los Angeles
Export Distributors: Curtis Wright Corp. In Canada: Williams & Wilson, Ltd.



roughness to assure perfect bonding of the new lining. It handles shoes of all types, ranging from 8 to 18 in. in diameter and up to 4 in. wide. A coarse grit belt is used to remove the old lining, bonding cement, rust and grease. A fine grit belt is then used to clean and smooth the bare shoe. A dust collector is provided and a special pipe connection is furnished for use with a vacuum unit. Lempco Products, Inc., Bedford, Ohio.

P111. Rinsable Paint Remover

A new water rinsable paint remover specially designed for removing finishes from metal surfaces, is effective on lacquer, enamel and synthetics; also on baked enamel and Zinc Chromate primer. It is applied with a brush and does not harm the brush.

The remover penetrates the finish, forming a soft mass, that can be flushed off with water, using a hose. The softened finish may also be removed with a stiff bristle brush or steel wool dipped in water, or with a putty knife or scraper. No wash-up is needed after the finish has been removed because it leaves no oily film or waxy deposit. The Wilson-Imperial Co., Newark, N. J.

(TURN TO PAGE 229, PLEASE)

New Product Descriptions

Continued from Page 226

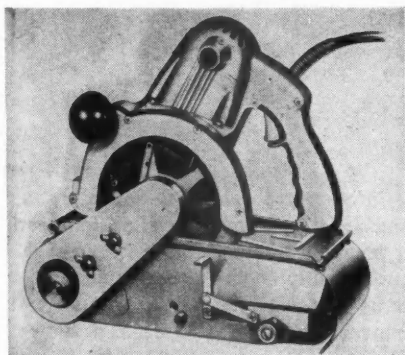
P112. Door Operator

An improved direct gear drive electric door operator called the Y-M CHIEF equipped with automatic safety switch is designed for overhead and single sliding or double parting doors. Switch breaks motor contacts when the closing doors touch any obstruction. The safety control automatically resets itself.

Use of a high strength aluminum alloy frame combined with machined cast iron parts have been designed to reduce weight of the door operator to provide easy installation with long, maintenance-free operation. The Y-M CHIEF is furnished with ball bearing-type electric motors of capacities to handle normal door requirements up to 200 sq. ft. Yoder-Morris, Inc., Cleveland, Ohio.

P113. Sander-Saw

Model 650 Sander-Saw, a 4-in. belt sander quickly convertible into a 6-in. portable saw, weighing 18 lb, does any kind of surfacing job from cutting with the saw to roughing-out with coarse sanding belts, to a ripple free finish



when used as a final finishing too. The belt is held under constant spring pressure and a tension latch provides for a quick belt change. Cummins Portable Tools, Chicago, Ill.

P114. Pallet Truck

New, shorter, lighter 12- or 18-volt pallet trucks, with an automotive-type, internal expanding brake are now on the market.

The new Moto-Truc pallet truck is only 23 3/4 in. longer than the load—for operating in smaller spaces. The easy-grip, roller-type handle controls two

speeds forward and two speeds reverse. Electric pump is located on top of truck for accessibility.

The brake is mounted on the side of the drive wheel as an integral part. Two internal expanding, self-synchronizing, vulcanize-lined brake shoes inside a cast Meehanite drum provide smooth, positive brake action under all

load and floor conditions. The Moto-Truc Co., Cleveland, Ohio.

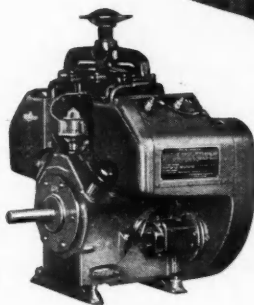
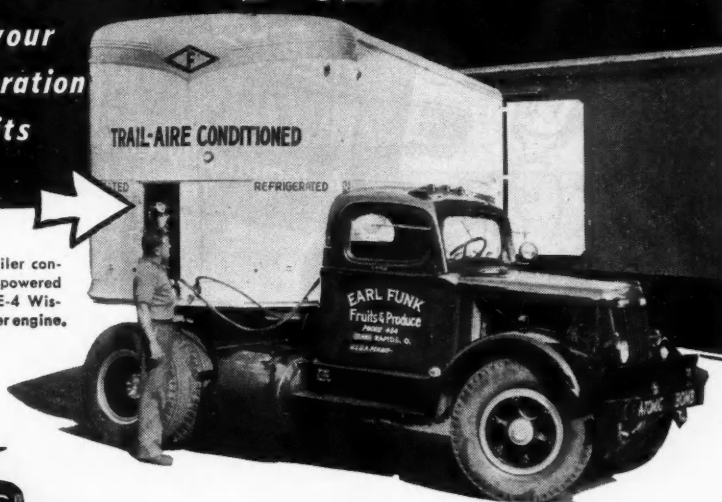
P115. Decal Sets

Three new decal sets for positive selection of three types of extinguishers for fires of 1) wood, paper, rubbish; 2) electric, gas, chemical; and 3) of any origin except electrical, help to identify and locate the proper fire extinguisher in a hurry.

A large decal is supplied for application (TURN TO PAGE 230, PLEASE)

Give a Thought to WISCONSIN Heavy-Duty Air-Cooled ENGINES for your Refrigeration Units

This tractor-trailer conditioner unit is powered by a Model VE-4 Wisconsin 4-cylinder engine.



Body builders, refrigeration engineers and fleet owners alike, who are familiar with Wisconsin Heavy-Duty Air-Cooled Engines, have a keen appreciation of such advantages as:

DEPENDABLE AIR COOLING. No cooling problems at any temperature from sub-zero to maximum summer or tropical heat.

COMPACT DESIGN. Wisconsin Engines are readily adaptable to available space allocations without sacrificing payload area. V-type design of 4-cylinder models assures an extremely compact power package.

HEAVY-DUTY SERVICEABILITY. The crankshaft of every Wisconsin Engine carries Timken self-cleaning Tapered Roller Bearings at both ends to take up end thrusts and radial loads, permitting direct drive from the extended crankshaft without need for a separate thrust or outboard bearing. We have yet to hear of a single case of Wisconsin Engine bearing failure.

ROTARY TYPE, HIGH TENSION OUTSIDE MAGNETO, equipped with Impulse Coupling, for smooth, steady ignition, easy starting in any weather, and minimum servicing.

Wisconsin engineers will be glad to work with you in planning your Refrigeration and Conditioner Power installations. Let us have a look at your blueprints and specifications and see what we can come up with.



WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 14, WISCONSIN

New Product Descriptions

Continued from Page 229

cation to the wall above the fire extinguisher, and a smaller one for the extinguisher itself. The new decals identify by color code, design, and by printed instructions naming proper use.

The sign for fires of wood, paper, or rubbish origin has black and yellow diagonal bars. For electric, chemical

or gas fires, the identifying design has red and white horizontal bars.

Red and white horizontal bars cut diagonally by a combination yellow and black stripe, identify foam type fire extinguishers, which are suitable for any but electrical fires. Meyercord Co., Chicago, Ill.



★ SPEEDS SERVICE

★ MORE "FILL-ER-UPS"

★ FULL TANKS—NO SPILL

When the gasoline reaches the tip of the Imperial nozzle tube a definite throb in the hand valve signals the operator to release the hand lever thus stopping the flow.

No need to guess, listen or look to prevent overflow. Tanks are filled faster . . . without spilling. Chances of blowbacks are greatly reduced.

Motorists react favorably to your

"Fill'er-up?" when you tell them about the Imperial "Auto-Fill"

Metal-covered flexible spout bends to fit all fill-pipes . . . is leak-proof, durable, non-static. Ask for Bulletin No. 354.

IMPERIAL "Auto-Fill" Nozzle Attachments

*No. 245-G (1 1/8"—24 thd.)	.....\$5.35 ea.
No. 246-G (1 1/4"—18 thd.)	..... 5.35 ea.
No. 247-G (1 1/8"—16 thd.)	..... 5.75 ea.
Adapters for No. 245-G to fit virtually any nozzle	.....0.45 ea.

*For 75 to 80% of all requirements.

See Your Jobber

THE IMPERIAL BRASS MFG. CO., 1209 W. Harrison St., Chicago 7, Illinois

IMPERIAL

BRASS FITTINGS • FLEXIBLE FUEL LINES
TUBE WORKING TOOLS • BATTERY HYDROMETERS
BARREL FAUCETS • WELDING EQUIPMENT

APPEARING IN *Jobber Topics*, *Super Service Station*, *Motor Service*, *Southern Automotive Journal* and *Canadian Automotive Trade* with appropriate copy for each publication.

P116. Hand Control Valve

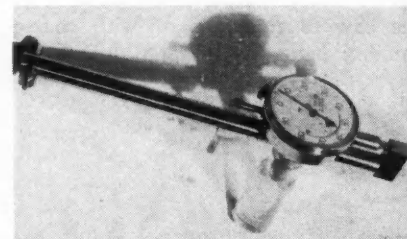
Designed for vacuum power brakes, this newly developed hand control valve for use on tractor trailer combinations, is said to graduate accurately, be consistent in action and positive in setting. Modern in appearance, it affords improved braking action under adverse weather and road conditions. Bendix Products Div., Bendix Aviation Corp., South Bend, Ind.

P117. Blast-Cleaner

Portable, and weighing 42 lb, this sand blasting machine, the "Blast Cleaner," is connected to any air line and operated at a pressure of 80 psi or more. If no service air is available, unit will operate on 1 1/2 hp compressor. A fine grade dry plaster sand is used. The machine will hold 95 lb, which will blast continuously for one hr. Gordon Mfg. Co., Burbank, Cal.

P118. Dial Bore Gage

Utilizing a design similar to that employed in the construction of their inside micrometers, the tool will give quickly and accurately the diameters



of internal grooves for "O" rings, snap rings, oil rings, etc., as well as diameters of straight bores. The instrument locates readily on the diameter of the cut to be measured and its indicator dial immediately gives the desired dimension. Operator skill required in its use is a minimum and deep holes are measured as readily as shallow ones. Standard instruments are manufactured to measure all diameters from 1/2 to 6 in. Rimat Machine Tool Co., Glendale, Cal.

P119. Flareless Fitting

New flareless tube fittings eliminate tube gouging, limit tube distortion and require no tube flaring. Installation can be made without special tools, and fittings are adaptable to close quarter connections. The gripping action of the fitting sleeve forms a leakproof seal

(TURN TO PAGE 232, PLEASE)

FOR MORE PAY LOAD

*There's More Worth in **KENWORTH***



How to meet rising costs of operation — that's the question facing most truck operators. And Kenworth has one of the answers in light weight construction which allows you to carry more payload every trip. While maintaining the highest standards of strength and durability, Kenworth's advanced design and engineering, plus the use of aluminum and other light weight alloys, add up to bigger payloads — more profit — for you.

Inland Petroleum Transportation Co., Inc., one of the West's most successful and longest established firms specializing in the prompt and efficient delivery of petroleum products, has been a Kenworth customer for 15 years. R. J. (Monty) Monroe, general manager, says: "The weight-saving advantages of Kenworth's Model 825 permit us to carry increased payloads, and this is one of the extra values we look for when purchasing trucks."



KENWORTH

TRUCKS ★ BUSES

FACTORY AND HOME OFFICE: SEATTLE, U. S. A., DISTRIBUTORS IN THE UNITED STATES AND MOST FOREIGN COUNTRIES

New Product Descriptions

Continued from Page 230

and makes it suitable for copper, steel, stainless steel, and aluminum tubing. It is available in all standard shapes and sizes for tubing up to and including 1 in. O. D. The Aircraft Fitting Co., Cleveland, Ohio.

P120. Extinguishers

Two and one-half gallon foam, soda-acid and cartridge operated fire extinguishers of seamless drawn shell

construction offer added strength and longer life. These units have a highly polished alloy shell with no dome or side seams. Transparent plastic nozzles are resistant to damage or distortion and make for visual inspection. The cartridge operated extinguishers having this new construction are of both the plain water and the anti-freeze solution types. Pyrene Mfg. Co., Newark, N. J.

P121. Radiator Seal

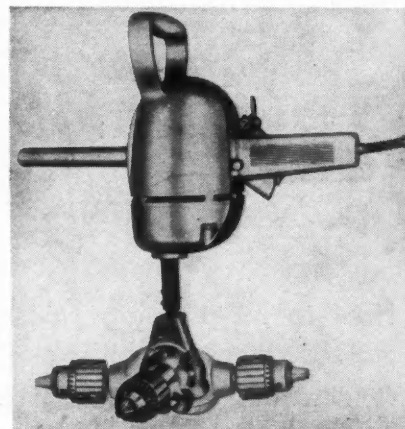
This improved Lusco Plastic Seal is said to be effective in repairing automobile radiator leaks, cracked engine blocks, etc. It cleans a system at the same time that it repairs leakages. It works in water, alcohol, glycols and methanol. Subsequent draining of the system after 24 hours does not affect the repaired places. C. F. Lusk Co., Cleveland, Ohio.

P122. Tilt-Type Trailer

This new "tilt-type" trailer with low platform for greater overhead clearance features a low center of gravity, which improves the safety factor, and a lesser angle of incline, which permits easier loading and unloading of crawler type equipment, non-self-propelled machinery, and rollers. The rear end of the platform of the units lowers to the ground for fast loading and unloading, a one-man operation. Martin Machine Co., Kewanee, Ill.

P123. Angle Head Drill

A 360-degree angle head attachment for 1/2-in. drills enables drilling in difficult, hard-to-get-at "tight spots." The angle head is quickly removed and will fit any make drill equipped with Model



33B Jacobs chuck. An aluminum casting, grooved to cradle comfortably in the operator's hand, houses 2-to-1 ratio gearing. When set at right angles the tool measures 7 1/2 in. Cummins Portable Tools, Chicago, Ill.

(TURN TO PAGE 234, PLEASE)

SLOW GAN

Be Safe, Be Seen: Wait for the Green

COMMERCIAL CAR JOURNAL, April, 1950

2

NEW DEVELOPMENTS — FOR TRUCK AND BUS TIRES

HI-TEMP

Heat-Resisting

VALVE INSIDES AND CAPS



No. 100-AH
Valve inside with special heat-resisting rubber in cup and on barrel.



No. 100-AW
Lead gasket on barrel, special heat-resisting gasket in cup.



No. 632
Dome type cap with swivel gasket of special heat-resisting rubber.



No. 631
Hexagon type cap with lead gasket mounted over brass sleeve.

By

DILL

Reg. U.S. Pat. Off.

Solves Air Pressure Maintenance Wherever Tire Heat is a Problem

Tire engineers and fleet operators, everywhere, are acclaiming this new Dill development. *Under abnormal hot tire temperatures, even up to 300° F. and more, the newly developed heat-resisting air seal keeps Dill HI-TEMP tire valve insides and caps airtight, without sticking. Stop road delays, prevent costly tire repairs, increase tire mileage by equipping your tires, now, with Dill HI-TEMPS.*

Ask for Dill "Hi-Temp" in the New Orange and Yellow Carton



2

New Long-Handled VALVE REPAIR TOOLS



No. 5200 TOOL SET
in Handy Leather Pouch

This new handy tool kit will save time and trouble for the service man working on truck and bus tires. Each tool is long-handled — especially designed to reach inner dual tires for removing and replacing valve insides, caps, and making any necessary repairs on valve stems. The complete set of 6 tools comes in a handy leather pouch with snap

*** INCLUDES THESE TOOLS**

- No. 5201** Valve Inside Insertor and Extractor
- No. 5202** Valve Cap Tool
- No. 5203** Valve Inside "Easy-Out"
- No. 5204** Valve Stem Refacer
- No. 5205** Valve Stem Seat Cleaner
- No. 5206** Valve Stem Rethreader

button lock which fits in pants, coat or jacket pocket. Order now from your wholesaler, tire, or oil company, or write us for description folder.

THE DILL MFG. CO.

700 E. 82nd St., Cleveland 3, O.
Branch: 1011 S. Flower St.
Los Angeles

Why YOUR Business *Gains* from **FIBERGLAS*** **Double-Insulated Batteries**

Batteries double-insulated with Fiberglas Battery Retainer Mats last longer and withstand more pounding and harder wear than others.

Why? Because Fiberglas Battery Retainer Mats materially reduce battery failures by holding down shedding and treeing through—in addition to protecting the separator.

To you, this means fewer battery breakdowns and schedule interruptions—when you use quality batteries double-insulated with Fiberglas Battery Retainer Mats. For full details, see your battery supplier or write to Owens-Corning Fiberglas Corporation, Dept. 49-D, Toledo 1, Ohio.



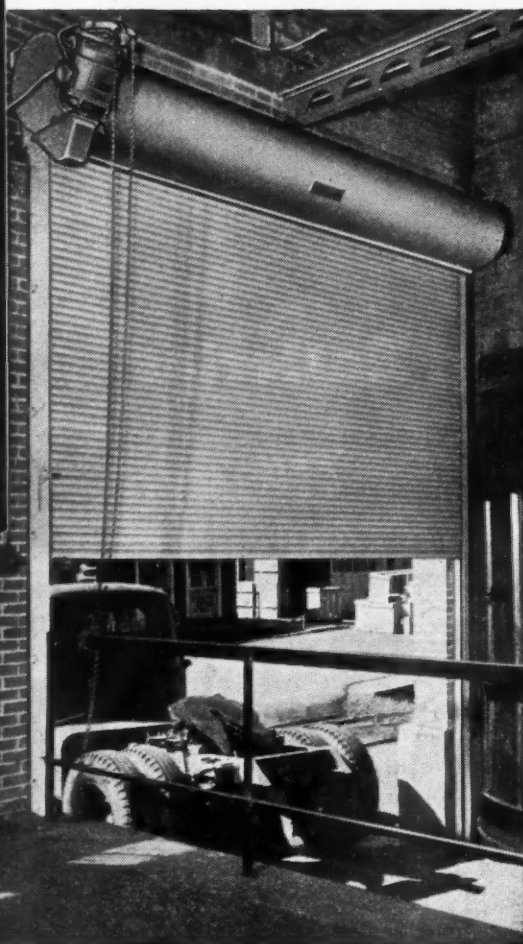
FIBERGLAS IS IN
YOUR LIFE...
FOR GOOD!

For Longer, Better Service...
Get Batteries
DOUBLE-INSULATED with

OWENS-CORNING
FIBERGLAS

*FIBERGLAS is the trade-mark (Reg. U. S. Pat. Off.) of Owens-Corning Fiberglas Corporation for a variety of products made of or with glass fibers.

**Install
Doors
that
CUT
COSTS
Year
after
Year!**



KINNEAR Metal Rolling Doors

Reducing *door costs* is not the only gain you make when you install Kinnear Rolling Doors. You also help cut other plant costs, in many ways.

Coiling upward action permits full use of all floor and wall space around openings, at all times. You can stack materials within an inch or two of the door, inside or outside—or on both sides—without impeding its action. This promotes more efficient handling of door traffic, deliveries, and shipments.

The smooth, easy action of Kinnear Rolling Doors saves time and labor—and no other type of door is so well adapted to the extra advantages of motor operation. With pushbutton

controls at any desired number of convenient points, the door can be raised or lowered quickly at a second's notice.

As a result, they are consistently closed more quickly after being opened, which brings important reductions in heating and air-conditioning costs.

When opened, the doors remain completely out of the way, safe from damage by wind or vehicles. When closed, their rugged all-metal interlocking-slat curtain assures extra protection against fire, intrusion, wind and weather.

Kinnear Rolling Doors are built in any size, to meet the particular specifications of each opening, in old or new buildings. Motor or manual control. Write for full information.



With this rugged Kinnear Motor Operator, doors can be opened or closed from any number of convenient push-button controls.

Saving Ways in Doorways

KINNEAR
ROLLING DOORS

Offices and Agents in All Principal Cities
THE KINNEAR MANUFACTURING CO.

Factories: 2100-20 Fields Ave., Columbus 16, Ohio
1742 Yosemite Ave., San Francisco 24, California

New Products

Continued from Page 232

P124. Autobody Solder

Differing from other solders in the character of its ingredients, "Super Solder" does not separate or skin over in the car, retaining its original pliability. It is claimed that it is easy to work, flowing on smoothly and feathering perfectly. It does not skin over while being applied, nor does it shrink, peel, pin-hole or crack. It adheres to all materials used in body construction, including aluminum, stainless steel and monel metal. Associated Producers, Inc., Detroit, Mich.

P125. Fluid Dispenser

Dispensing directly from original 100-lb. containers, the automatic transmission fluid dispenser is provided with 7 ft. of hose, fluid meter and hand-level pumping lever. It has both straight and curved ball-check nozzles to fit all types of automatic transmissions. Each nozzle is fitted with dust-and-dirt excluding cap. Cover gasket seals out dirt and prevents spilling. An identification plate identifies the unit for use only with Type A Automatic Transmission Fluid. The dispenser can be furnished with either a plate-type dolly, band-type dolly or a two-wheel hand truck. Aro Equipment Corp., Bryan, Ohio.

P126. Plastic Coating

A new line of ready-mixed, abrasion and corrosion resistant Vinyl plastic coatings, called "Calvinac," can be applied to wood or metal by brush, spray or dipping; are air drying; and non-toxic. They are highly dielectric; resistant to alcohol, acids, salts, alkali, and fumes these coatings are proof against cleaning mixtures, sterilization by steam, and will not oxidize. James Lithgow Co. Inc., Los Angeles, Cal.

(TURN TO PAGE 236, PLEASE)



"It meets any state regulation you can name."

...to help assure
“on time” schedules
**equip every vehicle
in your fleet with a
Hein-Werner Hydraulic Jack!**

Every vehicle in your fleet should be equipped with a rugged, easy-operating hydraulic jack of ample capacity to quickly handle emergency road repair. Jacks that won't work are a liability. Weed out your worn out jacks and replace them with Hein-Werner Hydraulic Jacks . . . the jacks that are factory tested at 1 ½ times rated capacity to assure dependability and safety. H-W Hydraulic Jacks are your greatest jack value for economy and service. Order through your Hein-Werner distributor today!

Made in models of 1 ½, 3, 5, 8, 12, 20, 30, 50 and 100 tons capacity, Bumper-Lifts, Swift-Lift, Sleeve Pullers and a complete line of Double-Acting Push or Pull Hydraulic Utility Units for body, fender and frame repairing.



HEIN-WERNER

HEIN-WERNER CORPORATION • WAUKESHA • WISCONSIN

New Product Descriptions

Continued from Page 234

P127. Odometer

Installed on the front axle of trucks, buses and passenger cars and on the rear axle of trailers, the Milemaster converts wheel revolutions into total miles. The units are furnished with a clear-face dial with large mileage figures and are sealed against tampering. The registering unit is interchangeable

and can be removed from one vehicle and installed on another without disassembly. Barbour Stockwell Co., Cambridge, Mass.

P128. Thermostat

A new thermostat said to hold its valve at the proper degree of opening

against the most powerful water pump consists of a brass butterfly valve assembly, operated by a thermostatic piston unit and a closing spring. Dole Valve Co., Chicago, Ill.

Late Product Flashes

Mounted on the right side, a new mirror, permitting the driver to see dangerous right rear traffic from his seat, has been announced by the George C. Knight Co., Detroit, Mich.

To supplement the conventional automotive and industrial type of spark plug in all thread sizes except 10 mm, a complete line of shielded plugs has been developed by the Champion Spark Plug Co.

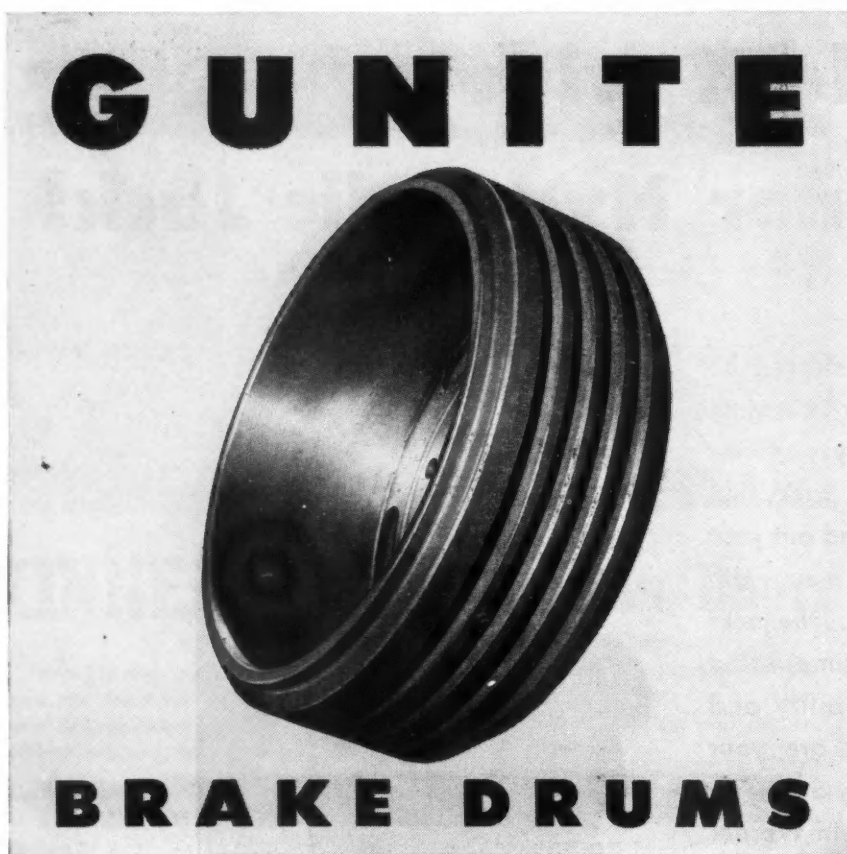
Addition of a new clear anti-rust paint to its RUSTREM (Rust Remedy) line of maintenance coatings is announced by Speco, Inc., Cleveland, Ohio.

A new Class "A" Turn Signal Lite, which, according to SAE specifications, requires 12 sq-in of luminous area, is announced by the K-D Lamp Co., Cincinnati, Ohio.

Especially designed to repair heavy duty canvas, TARP-SEAL cement, a non-inflammable, heavy bodied adhesive, which according to the United States Testing Co., can sustain a breaking load of 350 lb, is available from the Black Magic Adhesives, N. Y. C.

"Scotch" brand electrical tape which provides both electrical insulation and abrasion resistance is announced by the Minnesota Mining and Mfg. Co.

(TURN TO PAGE 238, PLEASE)



FEATURE NO FLEX

There is no flex on the cam and anchor sides of GUNITE Rib-Type Brake Drums. This means that linings wear evenly, last longer, brake efficiently. Also, burned spots are eliminated and drums last longer, require less frequent refinishing. GUNITES cost less in the long run because they give better service, require less attention. Breakage is eliminated by reduction of flex and by the high rate of heat conduction. Try GUNITES on your toughest runs. Let them prove themselves! Buy GUNITES — for better braking!

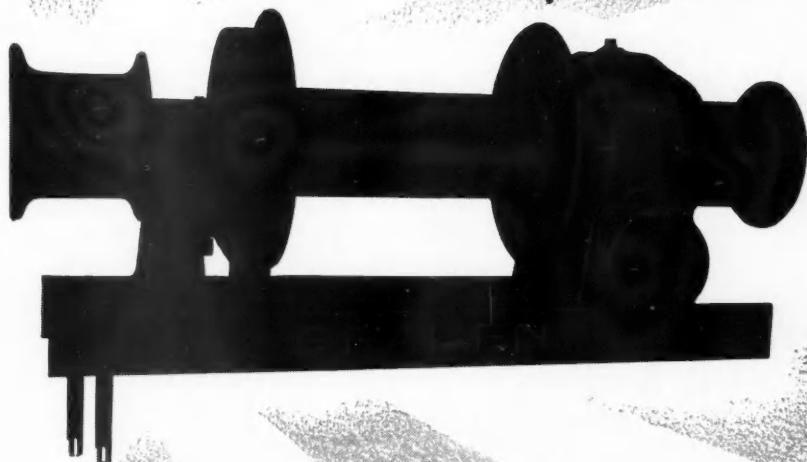



GUNITE BRAKE DRUMS . . . FOR TRUCKS, TRACTORS, TRAILERS and BUSES



"Yes, we go everywhere—is that so? Well, you know where you can go, too!"

THE OIL-COOLED... FULLY ADJUSTABLE



AUTOMATIC

SAFETY BRAKE

assures safety of operation

The BRADEN Oil-Cooled, Fully Adjustable, Automatic Safety Brake is designed for sure-fire holding power in any emergency. It was perfected only after years of experimentation in the factory and use in actual operation. The oil cooling provides maximum cooling benefits, cuts down on brake lining wear, and assures safe braking action under all conditions.

Ask users about the BRADEN Oil-Cooled, Fully Adjustable, Automatic Safety Brake. They'll tell you it's the safest winch brake they ever used.

MODEL M12-18B
Load Rating — 25,000 lbs.

The OIL COOLED,
FULLY ADJUSTABLE, AUTOMATIC
SAFETY BRAKE is standard
equipment.

BUY BRADEN — They Are Safer

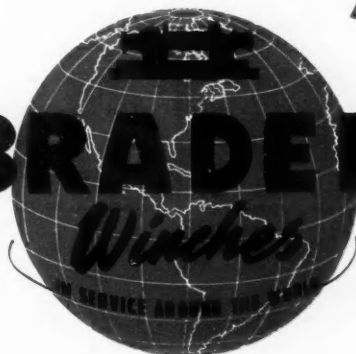
BRADEN WINCH COMPANY

Post Office Box 1709

BRADEN

TULSA 1,

Oklahoma



New Product Descriptions

Continued from Page 236

A strong sales story about electrical connectors, told via direct mail, is being promoted by the **Burndy Engineering Co., Inc.** Personalized mailing pieces with representatives' names and staff photographs, and a promotion story that shows the extent of jobber sales support, are featured.

The **Highway Trailer Co.** has added a complete line of trailerized tanks and

tank trucks to its present lines, by the recent acquisition of the **Davisbilt Products Co.**

The **Eutectic Welding Alloys Corp.** recently announced that a new series of training classes are being held at the new Eutectic Plant and Welding Institute in Flushing, L. I., N. Y.

The completion of the program for the

11th meeting, April 14 and 15, of the **Ohio State Welding Engineering Conference**, the theme which is "Economy in Design and Production," was announced by the welding engineering department of Ohio State University.

The **Minnesota Mining & Mfg. Co.** has purchased 26,000 sq-ft of additional office and warehouse space in Detroit, Mich. Two buildings and nearly four acres of land are included in the property.

Development of a new oil with a secret additive compound that reduces rust, an antioxidant agent and a new detergent additive which with **Conoco's** oil-plating, doubles the load carrying capacity of the Oil, has been announced by the **Continental Oil Co.**

Redesigned, complete storage equipment for tool rooms and stock rooms with a correct type of storage accessory available for every item, conveniently located, is now being marketed by **Lyon Metal Products, Inc., Aurora, Ill.**

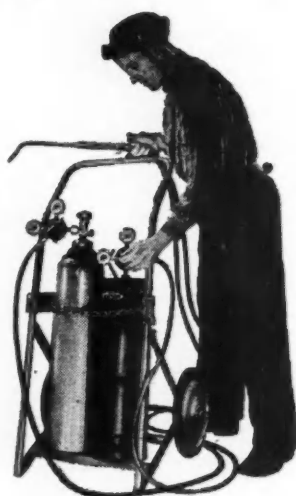
Designed to eliminate top shrinkage, **SP-7 "Teal,"** pre-shrunk, rubberized, convertible top fabric, has been placed on sale by the **Du Pont Co.**

A time-saving **Boot Hold-Back** device, which is a "U" shaped steel stamping that holds the rubber boot and body back to permit easier removal and installation of the cross pin, has been announced by **Neapco Products, Inc., Pottstown, Pa.**

Smaller 'Packages'... Same High Purity LINDE Oxygen and PREST-O-LITE Acetylene

Trade-Mark

Trade-Mark



now in
HANDIER
cylinders for

- Garages
- Small manufacturing plants
- Sheet metal works
- Electrical repair shops
- Heating, plumbing, and air-conditioning contractors

	Style	Capacity cu. ft.	Height in.	Diam. in.	Weight	
					Full lb.	Empty lb.
Oxygen	Q*	80	35	7 1/4	67	60
Acetylene	WQ	60	24 3/4	7 3/4	55	51

*In some areas, Style XL, 70 cu. ft.

ORDER FROM YOUR

Linde
Trade-Mark

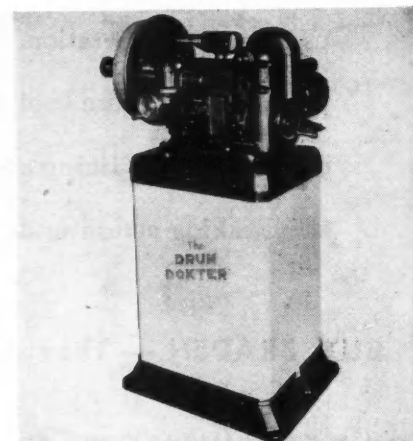
DISTRIBUTOR

"Linde" and "Prest-O-Lite" are trade-marks of a Unit of Union Carbide and Carbon Corporation.

Everyone who works with metals should have an oxy-acetylene welding and cutting outfit. A jobber near you can supply your needs promptly. Write us for his name and address. The **Linde Air Products Company**, 30 E. 42nd St., New York 17, N. Y. In Canada: **Dominion Oxygen Company, Limited, Toronto.**

P129. Drum Reconditioner

The **Drum-Dokter**, an improved brake drum reconditioner with a micrometer dial indicator for checking drum before and after reconditioning, machines, grinds and hones drums. A tool sharpener, a hone drive for honing brake



cylinders, reamer drive and chuck, disc brake housing unit for refacing and a flywheel clutch facing unit are available attachments. **Barrett Equipment Co., St. Louis, Mo.**

(TURN TO PAGE 240, PLEASE)

3 GREAT MOHAWK TRUCK TIRES



SUPER CHIEF TRUCK

An extra tread, heavy-duty truck tire for extremely long mileage. Vented shoulders reduce heat, insure longer wear.



BIG CHIEF TRUCK

Ruggedly designed for grueling special service—excavating, logging and mining operations, either on or off the road.



CHIEF BUS-TRUCK

Outstanding in quality throughout the country for safety, service and economy—the tire for the tough jobs.



"You get more miles on Mohawks!"

Their outstanding quality has been famous among fleet operators everywhere—for over 37 years! Yes, for every truck and bus tire requirement, you can rely on Mohawks for miles and miles of extra service!"



THE MOHAWK RUBBER COMPANY • AKRON 5, OHIO

New Product Descriptions

Continued from Page 238

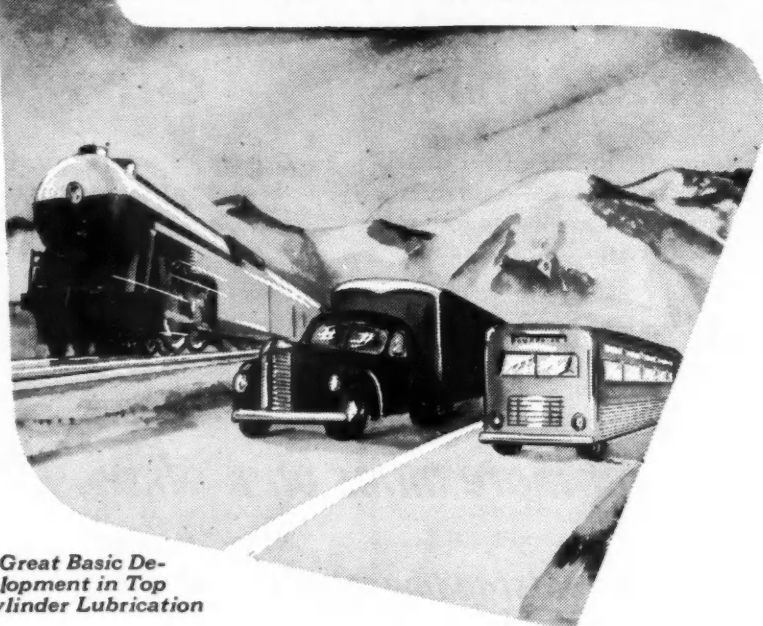
P130. Fork Lift

Both models of this fork lift truck have a lift capacity of 2000 lb at a 24-in. load center, with capacities of 2220 lb at 20-in. and 2600 lb at 15-in. load centers. Incorporated design features are a new steering axle, solid carriage plate, redesigned forged forks,

adjustable cushioned operator's seat, large diameter steering tires and interchangeable masts. A variety of lifting heights are available. The standard mast has a collapsed height of 64½ in. with an 85-in. lift. The single hydraulic control lever and gear shift levers are mounted on the steering column. The Buda Co., Harvey, Ill.



levels the Highway
to a **ROADBED**



A Great Basic Development in Top Cylinder Lubrication

Imagine a highway as smooth and level as a railway road bed — no hills, no dales, no dips, no rises! Just smooth sailing! Every highway is like that when your fleet's AMPCO-equipped! Because the AMPCO Vapor Lubricator gives you *more power* for the up-grades, *more speed* for the level stretches and *fuel economy* that more than compensates for the winding, twisting, rising, falling highway ahead. But don't take our word for it (nor the word of leading petroleum experts)—take any two of your fleet, put an AMPCO on one, don't put it on the other. Then, compare! Make this test today. See your AMPCO Dealer now, or write us and find out how you can make this amazing test.



AUTOMOTIVE & MARINE PRODUCTS CORP.

87 HARVARD AVENUE, BOSTON 34, MASS.

P131. Auto Creeper

The new Gi-Gr-Nite auto creepers, feature recessed reinforced, stamped steel corners in addition to a long head rest, new wood grip lock washers and a hand hole for carrying. Side rails have been eliminated. The creeper is low enough so that mechanics may slide under any vehicle. The 3¼-in. patented casters enables the creeper to slide over cracks and rough surfaces. Clinton Products Co., Clinton, Mich.

P132. Drill Adapter

Chucked in any standard ¼-in. electric drill, this Hamer-Drill adapter 8½ by 1½ in., converts the drill into an electric hammer for moderately heavy hammering. The adapter unit changes the rotary motion of the drill (or other driving mechanism such as a flexible shaft with a ½-in. chuck) into hammering action, striking a blow for each revolution of the drill or chuck. Featured is a shock absorber which protects the drill and the operator from the excessive vibration. Hamer-Drill Co., New York, N. Y.

P133. Operating Recorder

New models of the Servis Recorder, for recording busy time and idle time of motor trucks and machinery, features a marking device which marks on the chart exactly when the recorder was unlocked. This mark appears as a round dot on the face of the chart and



it is also embossed on the back. The models are completely changed in shape and appearance and now have a black crinkle finish. The Service Recorder Co., Cleveland, Ohio.

(TURN TO PAGE 242, PLEASE)

Uniform High Heat is Beneficial!

FLEET OWNERS! — Study This Chart, Read These Facts, Heed The Results!

How HOT is your Engine?

The amount of wear which takes place in an engine after a cold start depends upon how fast the various parts attain their correct operating temperature and how long it takes the oil to warm up and become fully circulated. The temperatures shown below the chart are the approximate operating temperatures.

KYSOR SHUTTERS

.. Provide Quicker Warm-Up and Keep the Kind Heat In!

Furnish Temperature Control

Contrary to popular belief, heat is helpful to a motor—if uniform, and properly controlled. A Kysor Shutter on your radiator insures a quicker warm-up! Operating automatically (by air or vacuum control) it maintains the proper temperature at all times. The results:

Less wear on cylinder wall and elsewhere . . . Prevents sludge . . . Avoids frequent engine breakdowns . . . Less oil consumption . . . Adds more power and longer life . . . 8%—12% more fuel saving

This means greater efficiency for truck operators and great economies for fleet owners. Kysor Shutters are easy to install—or specify them from your truck manufacturer.

Write for bulletin or Specific Information as applied to your Fleet.

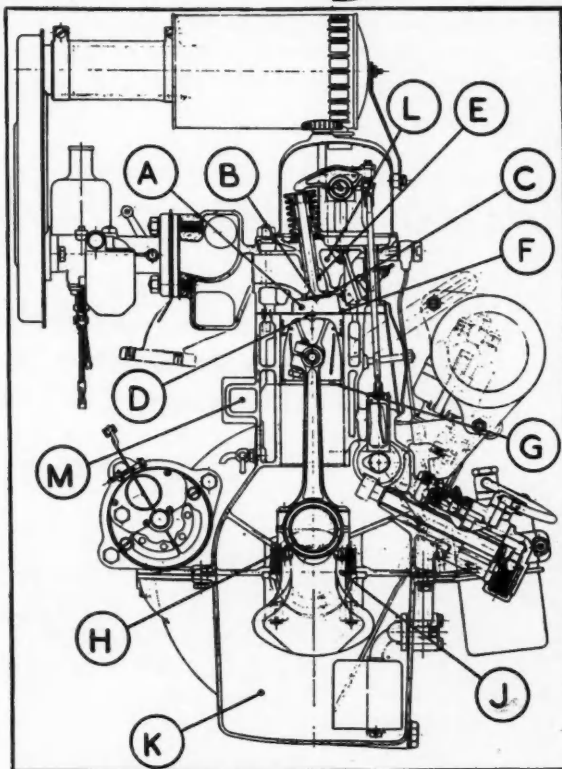


Chart by courtesy.
MOTOR TRUCK & COACH (Canada)

A—Flame Temperature	4532° F
B—Exhaust Valve Head	1400° F
C—Exhaust Valve Seat	662° F
D—Piston Crown (Center)	572° F
E—Exhaust Valve Guide (Inner End)	446° F
F—Cylinder Head	302° F
G—Piston Skirt	284° F
H—Big End Bearing	212° F
J—Main Bearing	203° F
K—Oilpan Oil	185° F
L—Cooling Water (Out)	176° F
M—Cooling Water (In)	122° F



"Built to Last"

KYSOR HEATER COMPANY Cadillac, Michigan

CANADIAN REPRESENTATIVES... RAILWAY & POWER ENGINEERING CORP.

NEW GLASGOW · MONTREAL · NORANDA · NORTH BAY · TORONTO · HAMILTON · WINDSOR · WINNIPEG · EDMONTON · VANCOUVER

New Product Descriptions

Continued from Page 240

P134. Door Switch

A magnetic switch designed for signalling and operating functions rings a bell or sounds a chime, summoning attendant to open the door as a truck enters.

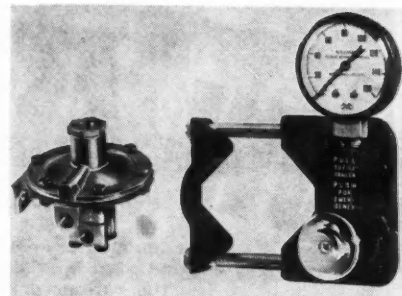
It can also be used as a warning signal to pedestrians crossing drives. Snow, ice, or water will not affect its

operation. It can be used to open garage doors automatically while driver sits at the wheel of his truck or car. Nu-Way Signal Co., Chicago, Ill.

P135. Air Control

An automatic air line control system, engineered to give braking power

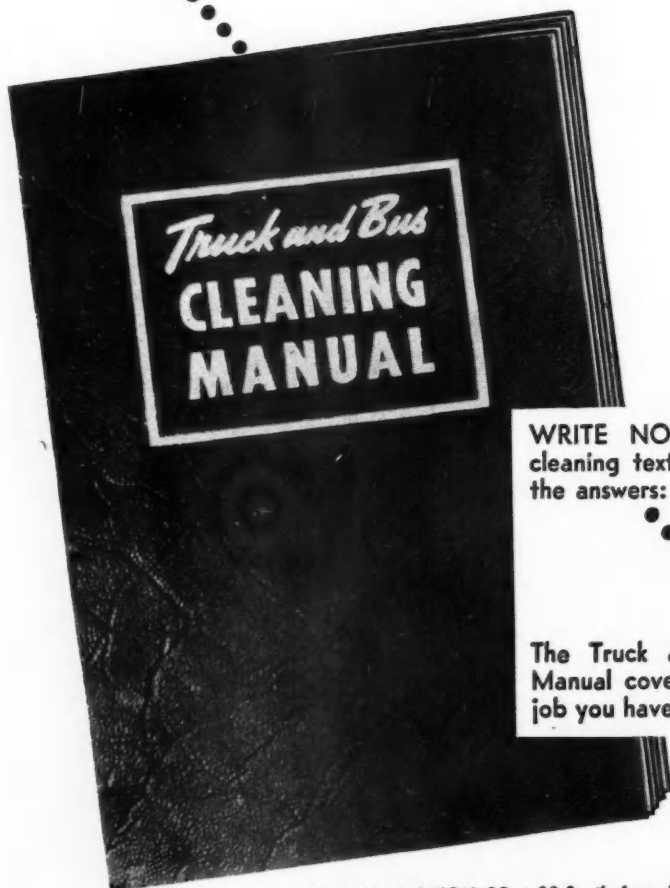
under most known human or mechanical air brake failures, is available in a compact kit which can be installed by any mechanic. The system contains a cab-mounted air valve with gage mount-



You Can Have . . .

- ① Cleaner Bus Bodies
- ② Faster and Better Dismantled Parts Cleaning
- ③ Safer Cleaning Routines for Cooling Systems
- ④ Dependable Sludge Control

. . . and they will cost you less!



WRITE NOW for this free cleaning textbook and look up the answers:

- ① Pages 37-43
- ② Pages 17-29
- ③ Pages 30-36
- ④ Pages 11-16

The Truck and Bus Cleaning Manual covers every cleaning job you have to do!

MAGNUS CHEMICAL CO. • 38 South Ave., Garwood, N. J.
In Canada — Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que. Service representatives in principal cities.



MAGNUS

CLEANERS • EQUIPMENT • METHODS

ing bracket and the Williams ES-57 relay control valve. This installation is said to offer automatic action for braking if air service line becomes broken; if trailer breaks away; if relay emergency valves become leaky. Disconnecting trailer or connecting trailers on a grade is also simplified. Power Brake Equipment Co., Portland, Ore.

P136. Fork Truck

A 10,000-lb capacity fork-lift truck, gasoline-powered and equipped with the Dynatork Drive, has been added by the Industrial Truck Div. of Clark Equipment Co. The new model is known as the Utilitrac-100.

The Dynatork Drive will be standard equipment on the new truck, and the only type of drive available. It transmits engine power through a magnetic field, across an air gap, eliminating need for any type of friction clutch. The conventional transmission is also eliminated, and replaced by constant-mesh forward-and-reverse gearing.

Other features are the Clark pivoted steering-axle assembly, which increases stability by maintaining all four wheels in constant contact with the road surface; and a 6-cylinder Red Seal Continental industrial-type engine of 209 cu in. displacement, developing 50 bhp at 1800 rpm.

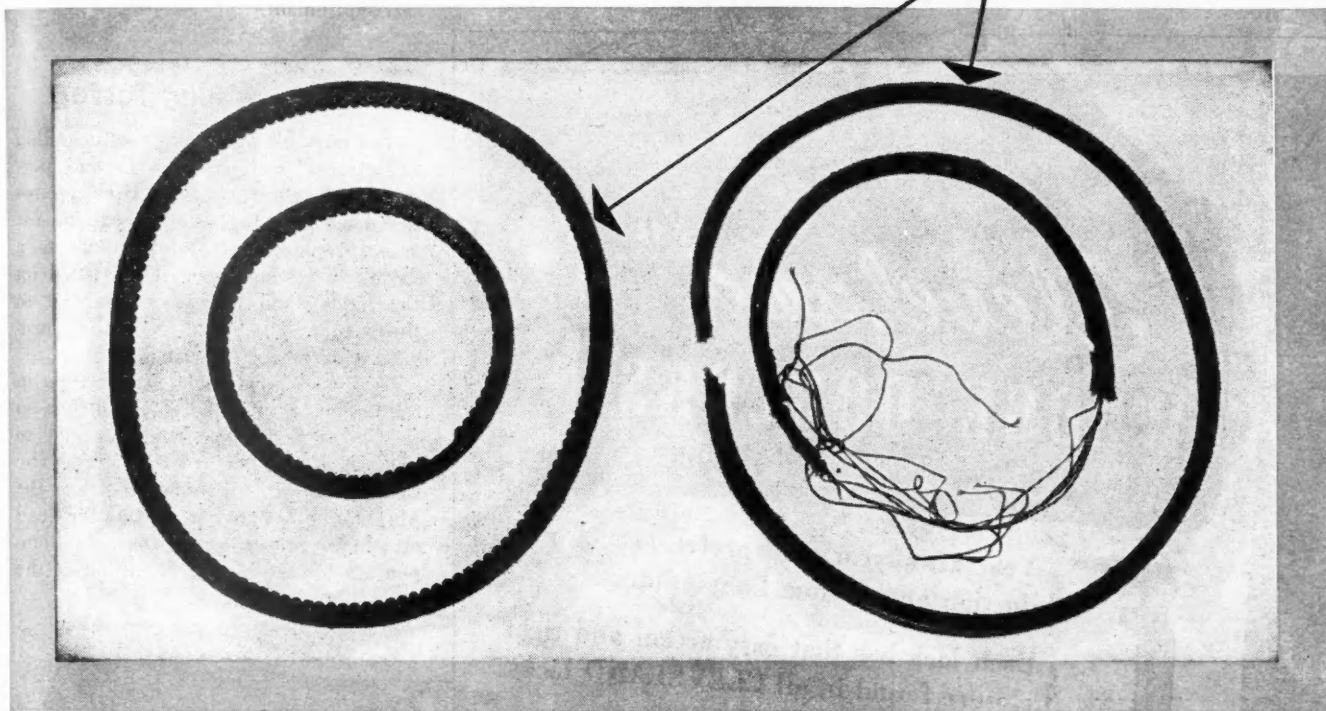
P137. Continental Engine

Continental Motors has broadened its line of small air-cooled industrial (TURN TO PAGE 244, PLEASE)

OBSERVATION

It is possible to make a sound argument without a lot of noise

Which belts went to school 90% LONGER?



Both these sets of automotive belts ran on school busses. The big belts drove generators, the small belts compressors.

The set on the left—Dayton Cog-Belts*—went 46,241 miles without failure. The other set “flunked” after only 24,277 miles.

Dayton Automotive Cog-Belts* consistently outrun other makes. They are of exclusive, patented Cog construction. They are scientifically built to bend. The space between cogs takes up compression as the belt goes round the pulleys. Result: greater flexibility, less heat generated, longer life.

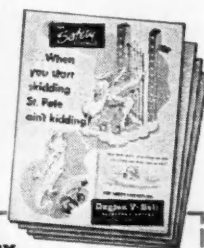
For longer trouble-free belt life on fan, generator, and accessory drives, take a lesson from these belts that went to school—get Dayton Cog-Belts*! See your Dayton Distributor or write:

THE DAYTON RUBBER COMPANY, DAYTON 1, OHIO

*T.M.

Safety shows up in “Profit and Loss”

Safety often means the difference between a fleet owner's operating in the red or the black. Dayton has designed a colorful set of safety posters (17" x 22") that will help sell your drivers on safety. They are *free* to all fleets. Just fill out the coupon!



**THE DAYTON RUBBER COMPANY
DAYTON 1, OHIO**

Name _____

Company _____

Street _____

City & State _____

Cog-Belts by Dayton Rubber

WORLD'S LARGEST MANUFACTURER OF V-BELTS

New Product Descriptions

Continued from Page 242

engines with the introduction of two new models, the AC-5 developing $\frac{3}{4}$ to 1 hp, and the AC-6 developing $1\frac{1}{2}$ hp. Both feature specially-designed suction-type carburetor in conjunction with underslung fuel tank. The AC-5 extends the company's range below its former $1\frac{1}{2}$ hp level.

The new models are single-cylinder

four-cycle L-head engines, having bore and stroke of $2\frac{1}{8}$ and 2 in. respectively, displacement of 7.1 cu in. and compression ratio of 5.2 to 1. Like their companion models, they are designed for heavy duty. Power take-off end of crankshaft is equipped with ball bearings of large capacity, and cranking end with shoulder-type replaceable

bronze bearing with integral thrust face. Exhaust valve is heat- and corrosion-resistant silchrome steel, seating in special alloy steel insert. Standard equipment includes oil bath air cleaner, dustproof and moisture-proof Wico fly-wheel-type magneto, blower housing, muffler, 1-qt fuel tank, air-vane governor, and rope starter pulley with rope and handle. Recoil or kick starter assembly, remote throttle control, ignition lock, and heavy-duty 6-1 reduction gear, which can be mounted in any of four positions, are available as special equipment.

"Cleveland" WEDGE DORLOKS



No. 2385

Year after year, the preference of production and custom bodybuilders.

Each lock has that easy action and tight closure found in all CLEVELAND locks.

Heavy springs force firm pressure on rugged drop-forged bolts. Beveled strike plates to exactly fit the take-up angle of the bolt furnished at no extra charge.

Centerpiece completely covered to prevent merchandise being caught in working parts.

Cadmium plated to insure trouble-free action for many years.

No. 2385 Right-hand Lock illustrated. Left-hand or three-point locks available.

New items constantly being engineered and developed for the Automotive trade.

Send for complete catalogue #22-B.



THE CLEVELAND HARDWARE
and FORGING COMPANY

3264 East 79th St.

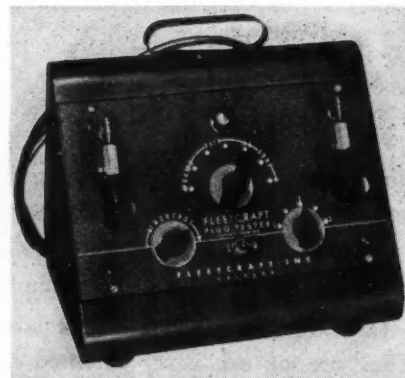
Cleveland 4, Ohio



P138. Spark Plug Tester

The portable spark plug tester called "Fleetcraft" weighs seven lb and permits on-the-engine testing. It eliminates the need for plug removal except for actual replacement and thus effects a saving in testing time. It is placed on the fender and the leads attached to the vehicle's battery. No other provision for power is needed.

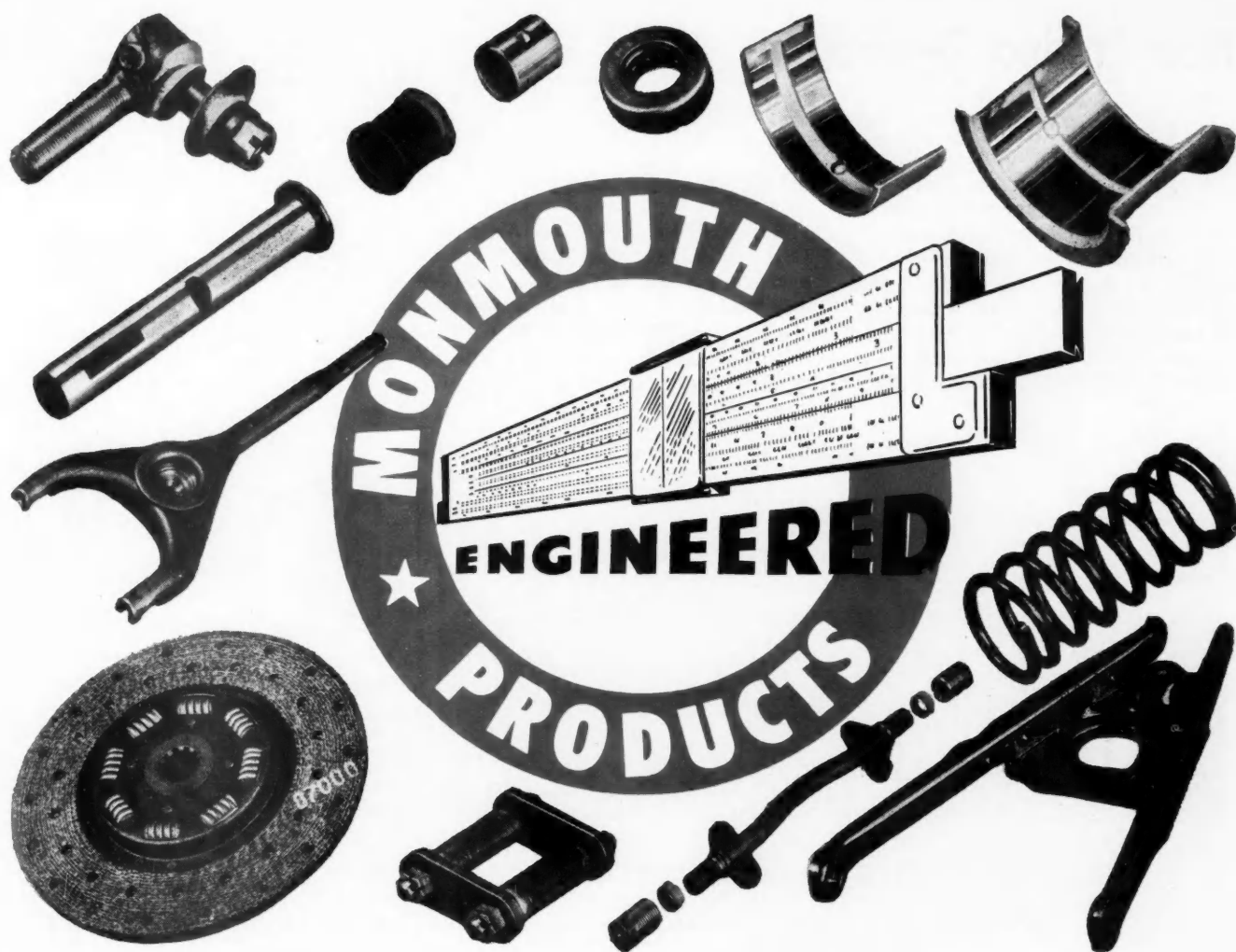
A new plug, identical to the type in the engine, is inserted into a fitting on the instrument panel and checked to operate at 100 per cent efficiency. The distributor wire is removed from the plug to be tested and the tester lead attached. One control is set to compensate for the charge condition of the



battery. Manipulation of a second control then indicates the efficiency of the plug under test as compared to the new plug in the panel. For bench testing a second fitting on the instrument panel receives the plug under test and the comparison is made again against the new plug. Fleetcraft, Inc., Chicago, Ill.

P139. Portable Welder

This high output portable spot welder for 220 volt lines, weighs only 31 lb. It can spot weld to two pieces of 13-gage of stainless or mild steel, providing (TURN TO PAGE 246, PLEASE)



What they are—and why it pays to use them



Your NAPA Jobber is a Good Man to Know!

THE line of Monmouth Replacement Parts includes the world's finest engine bearings, clutch plates and parts, King Bolt Sets, front end parts, and wheel suspension parts.

It pays to use Monmouth Replacement Parts because each one is specially engineered for the service which the vehicle is called upon to perform and the problems which will con-

front the repairmen in making replacements.

It pays to use Monmouth Engineered Replacement Parts because of the outstanding *Minute-Man Service* provided by N.A.P.A. Jobbers coast to coast.

For economy and perfect performance, specify "Monmouth" when you require replacement bearings, clutch plates and parts, and chassis parts.

MONMOUTH PRODUCTS DIVISION
THE CLEVELAND GRAPHITE BRONZE COMPANY
Cleveland 3, Ohio

**FOR ENGINE BEARINGS
CLUTCH PLATES AND PARTS
CHASSIS PARTS**

Monmouth
Trade Mark *is the name*

New Product Descriptions

Continued from Page 244

ing material fit-up is good, and two pieces of 16-gage galvanized. Incorporated is the Miller multi-pressure tong lever which enables the operator to get into spots where working space is limited. A handle may be attached to either side of the welder to provide for easy operation and portability. The Miller Electric Mfg. Co., Appleton, Wis.

P140. Hand Hoists

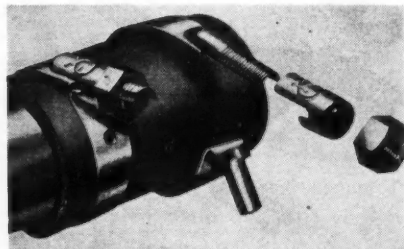
Wright Hoist Division of American Chain & Cable Co., Inc., York, Pa., has announced a new line of Wright Safety hand hoists. These new hoists are made in capacities from 1/2-ton to 4-ton with an unusual degree of safety, efficiency and portability. They are

compact, close headroom, lightweight and easy to handle in tight places.

Construction features simplicity of design, a modern gear drive, Weston type brake, steel load chain, steel housing, self-lubrication, and drop forged top and bottom hooks.

P141. Hose Clamp

This new KC hose clamp tightens with a nut, and will withstand pressures of 300 psi. It makes a permanent



connection that is unnecessary to shellac. Because of the design of the split thread, it provides a push-pull action so that a 360-deg seal is assured. The thread stands from 80 to 110 in. lb torque. Blaisdell Mfg. Co., Long Beach, Cal.

P142. Light Portable Hoist

Weighing only 8 1/2 lb, the Lug-All, winch type hoist has a 3000-lb lift capacity and a travel of 7 1/2 ft with maximum load. With a power ratio of 30 to 1, lifting is obtained through ratchet action with a pawl holding the load. The unit is tested for 50 per cent overload. Flexible aircraft cable is used with the cable drum, shielded to prevent back lash. The frame is made of aluminum alloys and hooks of carbon steel. Pre-lubricated sleeve-type bearings are used throughout. Lincoln Precision Machining Co., North Grafton, Mass.

P143. Hand Truck

The nose plate of this hand truck contains two small wheels which enables it to be rolled under palletized loads. With a slight pull on the handles, the load tilts into balance for carrying. Made of an angle iron frame 1 1/2 by 1 1/2 in., the 8-in. regular wheels are mounted in solid rubber tires and incorporate grease-packed roller bearings. Unit is 50 in. high, 20 in. wide and has a base plate with a 13-in. nose. Capacity is 1200 lb and weight is 110 lb. Anthony Truck Co., Paducah, Ky.

(TURN TO PAGE 298, PLEASE)



The Triborough Bridge and Tunnel Authority Chose **THE** **BIEDERMAN** **TRUCK**

because of its

- *Sturdy Construction*
- *Dependable Power*
- *Capacity for Big Loads*
- *Advanced Design*
- *Accessibility of All Parts*

FLEET OPERATORS: Let us send you complete specifications of the Biederman National Standard Model. Compare them with any other truck on the market and you will then understand why the Triborough Bridge and Tunnel Authority chose Biederman trucks for their reliability.

For complete information write, wire or phone.

BIEDERMAN MOTORS CORPORATION
CINCINNATI, OHIO

Drums last longer with Johns-Manville Brake Blocks...



On the country's toughest runs—where trucks and buses haul the heaviest loads, and brake linings get the most rugged test of their stopping ability and long life—the new J-M Brake Blocks *have more than proved that they can take it!*

There's good reason for this... because J-M Brake Blocks are the result of a new, scientifically balanced formula-

tion, that was especially developed by the Johns-Manville Laboratory to give slow, even wear and to prevent costly scoring and checking of drum surfaces... that was designed to give the longest, most economical brake block life with the greatest amount of trouble-free service.

As proved on the Heat Check Analyzer—an exclusive J-M laboratory

device for checking both block life and drum life... and as proved on thousands of runs, and hundreds of thousands of miles of the hardest road usage on all kinds of trucks and buses... J-M Brake Blocks will give you fewer pull-ins, better block and drum life, and better mileage at lower operating cost. Why not test a set of J-M Brake Blocks on your *next* pull-in!

PRODUCERS OF THE FAMOUS 4-STAR FLEET TESTED SETS

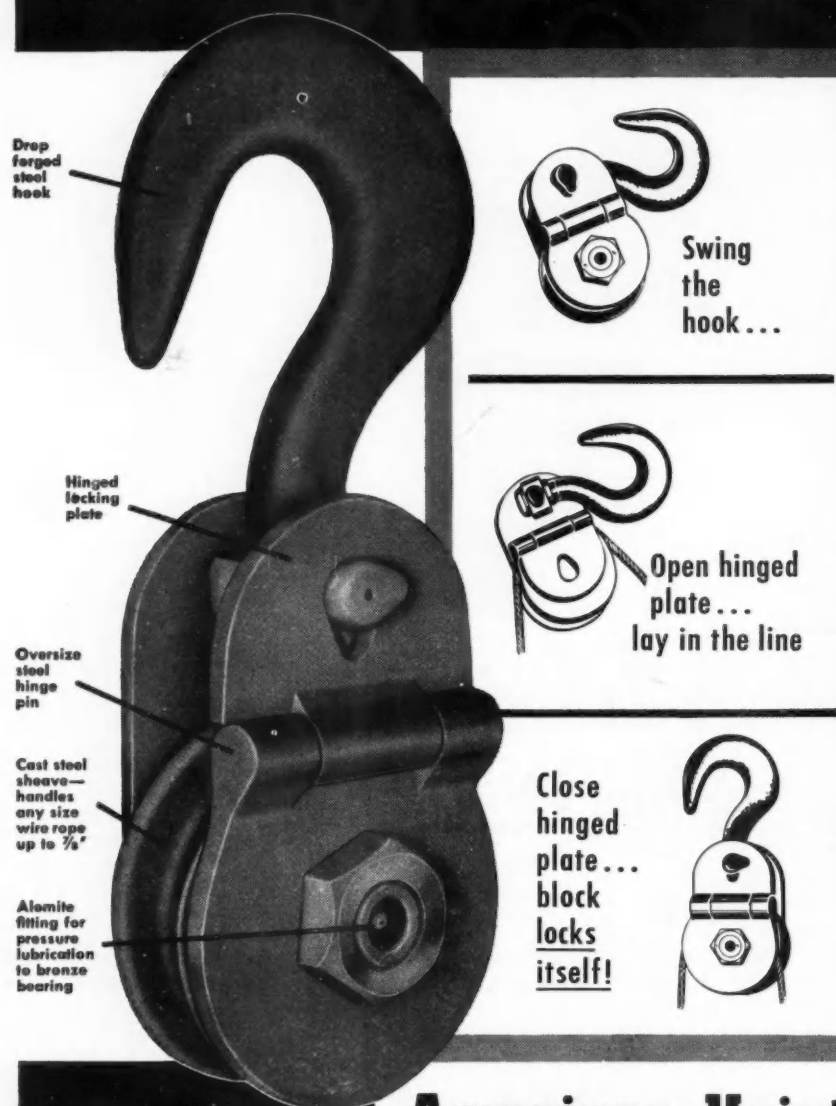


Johns-Manville ASBESTOS FRICTION MATERIALS

THE FIRST NAME IN ASBESTOS BRAKE LININGS

RIG IT IN 5 seconds!

AMERICAN HEAVY DUTY UTILITY SNATCH BLOCK



Here's a snatch block any man can rig in 5 seconds... without a wrench! No loose parts; nothing to drop or lose. Available in 6", 8" and 10" sheave diameters. Sold by distributors everywhere. For catalog showing all wire rope blocks—1½ to 250 tons...

MAIL THIS COUPON

American Hoist

52 & Derrick Company 5303
St. Paul 1, Minnesota

● Please send catalog on AMERICAN
UTILITY SNATCH BLOCKS.

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

Washington Runaround

Continued from Page 35

Jan, pg 67) will "highlight the national problems and complexities experienced in our domestic transportation so that at a later date the subcommittee can recommend legislation based upon accumulated facts and testimony."

Meanwhile, the House Interstate and Foreign Commerce Committee has concluded a series of hearings designed to bring committee members up to date on transportation problems as well as to give the various transportation industries and agencies an opportunity to review problems peculiar to their respective fields. The hearings were highlighted by a dreary recital of the woes of the railroads whose spokesmen blame the present sad state of affairs on "subsidies of various kinds to other forms of transportation" and of uneconomical regulation between the several forms of transportation. The railroad claims were refuted by the American Trucking Association, Inc. No overall legislation amounting to very much is likely to result from the hearings before the House Committee as will probably be the case in regard to the Senate Committee.

Federal Transport Consolidation

President Truman has taken another step toward consolidating transportation functions of the Federal Government in the Dept. of Commerce. His reorganization proposal to Congress which would abolish the Maritime Commission and transfer its duties and functions to the Commerce Dept. will become effective May 13, unless turned down by either House.

Mr. Truman in submitting the plan, stated that over the years "transportation functions have become widely scattered" throughout the government in direct contradiction to the act which charged the Commerce Dept., with fostering, promoting, and developing" * * * * shipping, * * * * and the transportation facilities of the United States."

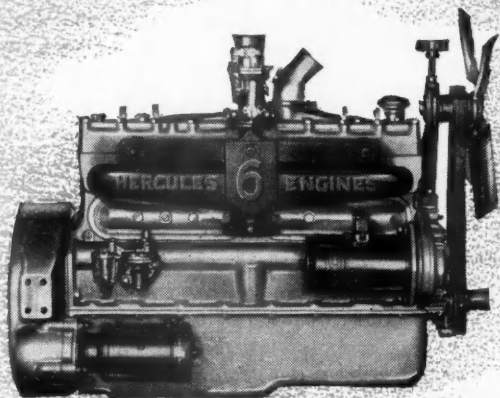
The President also pointed out that he intends to "look to the Secretary of Commerce for leadership with respect to transportation problems and for the development of over-all transportation policy within the Executive Branch."

In this connection, the President set forth his plan to appoint a new Under Secretary of Commerce for Transportation to supervise "the varied and com-

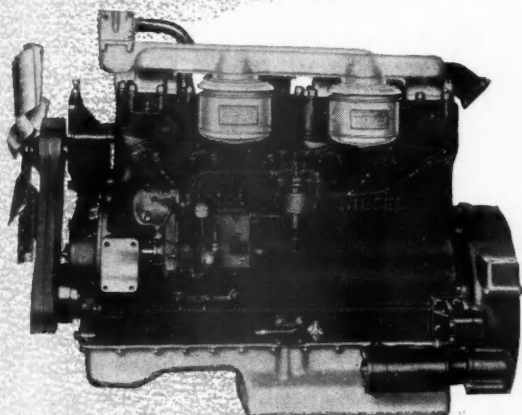
(TURN TO PAGE 250, PLEASE)

*More Miles for
Your Money
with*

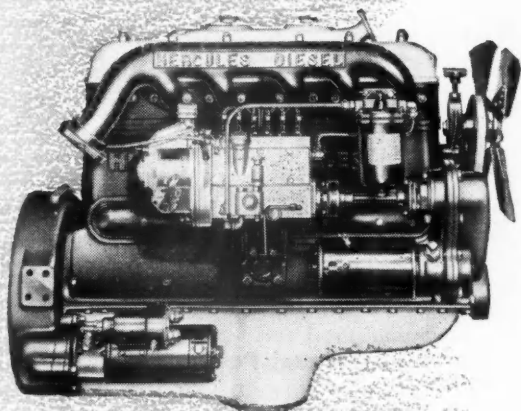
HERCULES ENGINES



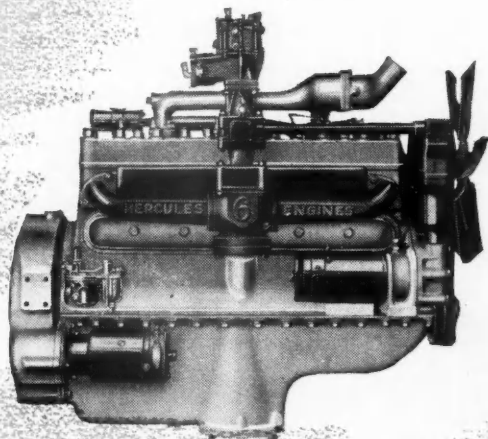
Model JXLD—Hercules 6 cylinder Gasoline Engine
339 cu. in. displacement



Model DFX—Hercules 6 Cylinder
Diesel Engine 935 cu. in. displacement



Model DRX—Hercules 6 cylinder Diesel Engine
529 cu. in. displacement



Model RXLDH—Hercules 6 cylinder Gasoline Engine
558 cu. in. displacement

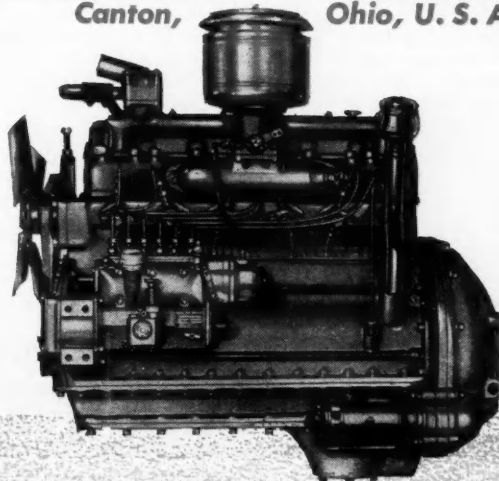


It takes that extra power and zip—the long life performance built into every Hercules high speed, heavy duty truck engine to keep trucks piling up low cost mileage on today's rugged schedules. It takes the streamlined design, sound engineering and modern, simplified construction, for which Hercules engines have an enviable reputation, to keep operating and maintenance costs to a minimum.

Hercules engines for truck service are built in a wide range of sizes and types, both gasoline and diesel, to meet every type of truck installation requirement. The compact design and light weight, heavy duty, high speed features of the Hercules diesel engines make them ideally suited for truck applications. Hercules invites you to draw upon its many years of experience in serving the truck industry with practical power application.

HERCULES MOTORS CORPORATION

Canton, Ohio, U. S. A.



Model DIX6D—Hercules 6 Cylinder
Diesel Engine 248 cu. in. displacement

Washington Runaround

Continued from Page 248

plex transportation programs of the Department" and provide "central leadership in transportation matters."

Mr. Truman further stated that "without question the Department of Commerce is now the appropriate center for transportation programs." He pointed out that the Commerce Dept. now contains the Bureau of Public

Roads, Civil Aeronautics Administration, the Weather Bureau and the Coast and Geodetic Survey. The transfer of the functions of the Maritime Commission will bring into the Commerce Dept. the principal water transportation agency of the government.

It is anticipated that future reorganization proposals will call for the trans-

fer of the non-regulatory functions of the ICC to the Commerce Dept. This course of action was recommended by the Hoover Commission on Government Reorganization.

Skilled Labor Shortage

The Labor Department is warning that a shortage of skilled labor is likely to show up within the next few years. The reason is, the Bureau of Apprenticeship says, that not enough qualified places are training new workers—that out of 400,000 qualified business and industrial places, only about 150,000 are presently conducting apprenticeship programs. As a result, while nearly 73,000 apprentices (including 9,800 auto mechanics and 3,100 machinists) will complete training this year, only about 114,000 will do so in the following four years—or about 28,000 a year. This number, the BA says, is not "enough to meet demands of industry."

Washington Miscellany

All controls requiring the use of synthetic rubber in camelback, primary retread material, have been removed by the Dept. of Commerce. New rubber may now be used in camelback without government limitation . . . The Air National Guard will receive 7,000 general purpose vehicles from the Air Force under a program initiated last October. About 5,000 vehicles have already been shipped with the remainder to be delivered by June 30. The vehicles include: 3,300 trucks of various types, 1/4 to 5 tons; 3,200 1/4 and 1 1/2-ton trailers; 100 ambulances; also jeeps, motorcycles, bicycles, command and staff cars.

Beachhead Paving

An inexpensive method of quickly converting sandy beach strips into paved highways for amphibious landings has been developed by the Navy in cooperation with a Princeton University scientist. The method, a chemical process which hardens beach sand within 2 or 3 hours, is a mixing and densification operation performed in a single run over the sand with ordinary road-building equipment. Tests have shown that sand hardened by the process can support the weight of a slow-moving jeep within two hours and a seven-ton truck in three hours. After 24 hours a truck with a gross load of 13 1/2 tons made repeated runs without affecting the surface.

END

(Please resume your reading on P. 39)

COMMERCIAL CAR JOURNAL, April, 1950



Are You Still Switching Your Trailers the Hard Way?

ARE you still cranking dollies when doing your yard switching? This antiquated practice has long since been abandoned by truckers who are interested in reducing labor costs. How? Simply by equipping their tractors with Pollard Fifth Wheel Hydraulic Platforms.

With a Pollard Platform on your tractor, the driver can move a parked semi-trailer from one location to another all by himself. No need to have an extra man crank dollies. No need even for the driver to leave the cab.

This is because a tractor equipped with a Pollard 5th Wheel Hydraulic

Platform slides easily under the trailer front. The trailer is then elevated hydraulically with cab control, enabling the trailer to be moved with dolly wheels in vertical parking position. No dolly cranking!

The Pollard Platform actually enables one man to move twice as many trailers as 2 men can move with tractors having conventional 5th wheel mountings. You can take one man off the job and never miss him, making a worthwhile saving in labor costs.

No wonder the Pollard Fifth Wheel Hydraulic Platform has satisfied users all over the country! Write us for the names of users near you.

C. E. POLLARD CO.

14571 Schaefer Rd., Detroit 27, Mich.

LITERATURE
ON REQUEST



**5TH WHEEL
HYDRAULIC PLATFORM**

CHOICE OF THE LEADERS



**THE
HOLLEY Centrivic
SANDWICH GOVERNOR**
Combined with the DELCO Distributor

REDUCES POWER LOSS: The Holley Centrivic Governor does not choke the engine when pulling heavy loads up hills because governor throttle remains wide open until the engine reaches its governed speed. Hence, the Holley Governor reduces power loss and improves operating efficiency.

PROVIDES FASTER ACCELERATION: The Holley Governor permits the engine to accelerate normally since the governor throttle remains wide open up to desired control point of engine speeds.

ELIMINATES SURGING: Truck drivers appreciate the steady flow of power, free from surging, which has been accomplished by the unique and exclusive design of the Centrivic principle of centrifugal air valve control over a vacuum powered diaphragm.

IMPROVES SPEED REGULATION: The new Holley Governor is operated by a vacuum powered diaphragm

which is controlled by a centrifugal air valve mounted on the side of distributor. This insures a more even flow of power—greatly improved engine performance—a higher economy factor.

INSURES SMOOTHER OPERATION: Because engine surging has been successfully eliminated, truck operation has been improved. Driver objections to governor controlled vehicles have been largely overcome with the Holley Centrivic Governor, while wear and tear on a driver's nerves are removed, and fatigue factors reduced to the minimum.

ECONOMICALLY INSTALLED: Due to its revolutionary design, the Holley Centrivic Sandwich Governor can be installed on most popular truck designs without need for special drive, linkage, or adaptor accessories. Only one piece of metal tubing is used, connecting the governor control valve with the governor.

STANDARD EQUIPMENT ON

**AUTOCAR, CHECKER BUS, GENERAL AMERICAN AEROCOACH,
INTERNATIONAL HARVESTER, WARD LA FRANCE,
FLEXIBLE BUS, GENERAL MOTORS TRUCK AND COACH.**

**ALSO AVAILABLE FOR
OTHER POPULAR MAKES OF TRUCKS**

HOLLEY

Carburetor Co.

**5930 Vancouver Ave.
DETROIT 8, MICHIGAN**

AUTOMOTIVE EQUIPMENT AND ACCESSORIES

Detroit Dispatch

Continued from Page 31

IHC Price Comment Explained

In order to clear up any misinterpretation of an item in this column in February stating that International Harvester "recently increased prices on its completely new 1950 models," it was not meant that there had been an increase since the new line was announced in late November. The state-

ment that prices were up 5 to 6 per cent on light models and 8 to 9 per cent on the heavy duty line was based on information from a dealer. There seems to be some question about comparing prices on a comparable basis with the previous model, which always is a very difficult problem. Also, International has widened its range to meet specialized transportation problems so that

the various models and ratings have been rearranged. Consequently, it now is rather difficult to make any direct price comparisons.

Studebaker Counts on Its "Champion"

Studebaker is expecting to go after considerable fleet business with its new Champion custom model priced in direct competition with Ford, Chevrolet and Plymouth. The car is identical in chassis and body with the higher priced deluxe Champion, but has been stripped of radiator ornament, stone guard and chrome moldings. Upholstery material is not quite so expensive, some chrome has been eliminated from the instrument panel, and floor is covered with a rubber mat instead of carpeting. Priced \$75 under the deluxe model, it is slightly higher than the Chevrolet Special and Ford Six, but cheaper than the Ford V-8 and the Plymouth.

First Returns on ATA's Trailer Theft Study

Early returns from a questionnaire sent out by ATA to fleet operators indicate little progress will be made to amend the National Motor Vehicle Theft Act to cover trailers and semi-trailers. Theft of these units currently is not a Federal offense, although theft of a tractor or contents of a truck or trailer is covered.

New Gramm Trailers Reported

Gramm Trailer is reported to have two new trailer models about ready for announcement. They are equipped with aluminum bodies and probably will be out this month.

Engineers Cool to British Turbine Job

Interest in gas turbines got a fillip the last few weeks with the announcement that an English car manufacturer has produced a car powered by such a unit. Engineers in Detroit, however, are unimpressed, pointing out there are still serious problems of noise, heat, smell, and fuel consumption to be licked. In this country Boeing Aircraft has been working on a turbine power plant for trucks, but reports indicate that it still is far from a practical unit.

(TURN TO PAGE 254, PLEASE)

THE Servis Recorder Helps Prevent Accidents -

—SAY INSURANCE COMPANIES

These are from actual letters:

- "You are quite right—we do insist that quite a few of our assureds adopt the Servis Recorder in order to eliminate the driver stopping an hour or so and then getting out on the highway and burning up the road in order to arrive on schedule. The latest lines on which we have required Recorders are the _____ of Chicago and _____ of Detroit."
- "Please get in touch with the _____ and try to get the Servis Recorder as standard equipment upon their units, as we have been having some difficulty on this line and I believe it would be of material assistance to them in the reduction of accidents if they would equip their outfits with Servis Recorders and then make an intelligent use of them."
- "I see that you were able to sell the _____ quite a few recorders, and there has been a marked improvement in the operation of this line."
- "We will appreciate it very much if you will send your pamphlet 'About Speeding and Accidents' to the _____ Company of Detroit, _____ of Indianapolis, and _____ of Kansas City. I would certainly be pleased if they would install Servis Recorders."

Send for our "ACCIDENTS" folder.

THE SERVICE RECORDER CO.

1375 Euclid Avenue, Cleveland 15, Ohio

"Making Up" Wasted Time Causes Most Speeding—and Speeding Causes Most Accidents.



SPEED!
SPEED!
SKID!
CRASH!!

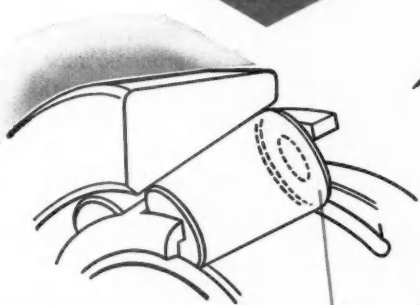


The Servis Recorder

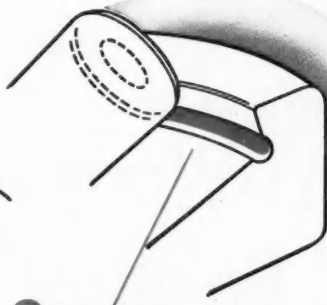
Helps Prevent Speeding and Accidents

BOWER BEARINGS ARE

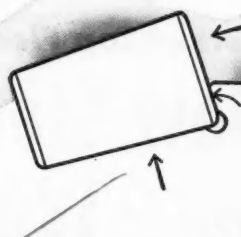
SPHER-O-HONED



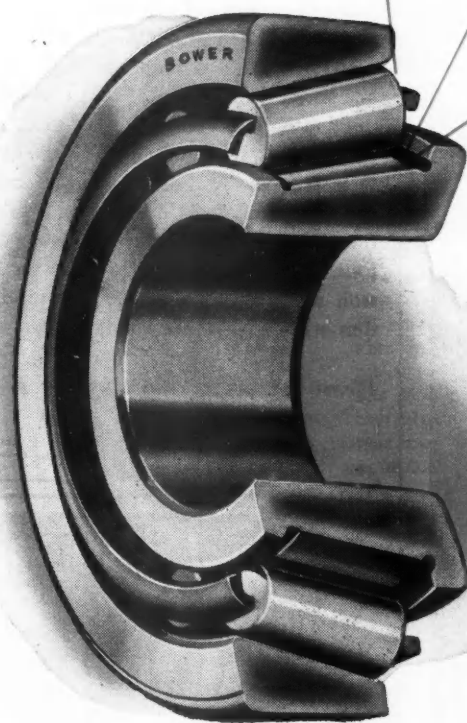
SPHER—Stands for generated spherical roll-head and flange surfaces designed and manufactured to the exact contour they would otherwise acquire in use. Alignment is improved; wear minimized.



O—Stands for the liberal oil groove which assures a generous supply of lubricant at the critical point where the roll-head operates against the flange, greatly reducing destructive friction.



HONED—Stands for hard, durable races which are honed to micro-inch smoothness. This bonus of precision eliminates the problem of run-out and also prolongs the life of the bearing.



...to improve your product
and your plant equipment, too!

Look closely at Bower Spher-O-Honed bearings. Note these basic refinements in design and construction—generated spherical roll-head and flange surfaces; large oil grooves; precise, durable races.

You'll see they can benefit your manufacturing operation in two *distinct* ways:

Installed in your product, Bower bearings contribute positive dependability—wear resistance—long life. They can help make yours a better product, better able to meet competition.

Installed in your plant equipment, Bower bearings guard the precision of your machines—boost efficiency—reduce maintenance problems. They improve your ability to produce a quality product.

Whatever you manufacture, from limousines to bulldozers—and whatever plant equipment you use, from machine tools to lift trucks—it will pay you to standardize on Bower bearings.

BOWER ROLLER BEARING COMPANY, DETROIT 14, MICH.

BOWER

ROLLER BEARINGS



Detroit Dispatch

Continued from Page 252

Court Ruling Favors Michigan in Tax Case

Michigan bus and truck operators have lost out in the State Supreme Court in a protest suit against an increase in the state's diesel fuel tax. The companies challenged a 1947 law under which the diesel fuel tax was increased from 3 cents a gallon to 4

cents for vehicles operating under municipal franchise and to 5 cents for all others. They charged that the tax was not uniform and violated the equal protection clauses of the State and Federal Constitutions.

Trucks Sell at Auto Show

It long has been a moot question among truck manufacturers as to

whether exhibition at an automobile show has any tangible value. However, experience of GMC at the Chicago Show in February has raised the stock of truck show proponents. The division sold a total of 31 units having a dollar value of \$238,500. One order alone accounted for 20 heavy-duty trucks costing \$200,000. In addition, 302 active new prospects were obtained as the result of sales interviews on the floor.

Another Top Fleet-Owner Cheers

The New Stewart-Warner Electronic Wheel Balancer!



Here's what Mr. JOHN A. MURPHY, Vice-President of the Gateway Transportation Company,* says—

"... Our garage foremen all tell me the Stewart-Warner Electronic unit is the fastest, easiest way to balance wheels accurately—right on the truck! We have used it for over 2 years on our 150 tractors, 89 pick-ups and 40 automobiles. This Electronic Wheel Balancer has materially reduced our maintenance and tire costs. Saves time on every job, too! ..."

*La Crosse, Wisconsin

IN MINUTES, this new Electronic Wheel Balancer checks single or dual, front or rear wheels—in true, running position! You avoid costly repairs, replacements and "downtime" in advance! And you increase driving comfort and safety.

Vibrations and pounding on front-end assemblies, tie rods and bushings are eliminated—without removing the wheels from the vehicle. Degree of unbalance is quickly, accurately registered up to 2/1000 of an inch by this easy, Electronic method.

WRITE TODAY for complete free information on this easy-to-use unit, produced by Stewart-Warner only. Address Dept. D-40 for rapid reply.



BILL McCANE (right) checks the front left on one of Gateway's heavy hauling units.

Stewart-Warner Corporation

Dept. D-40, 1828 Diversey Parkway, Chicago 14, Illinois

Truck Sales Picking Up

Truck sales departments are considerably more optimistic now than they have been for several months. In January and February buying started to pick up considerably, and is continuing to gain through the upcoming Spring season. Reasons for the upsurge are not easy to find, but general belief is that with the high scrapage rate of trucks continuing, the replacement market is larger than had been supposed. The latest figures indicate that 448,000 trucks went out of service last year, or about half the number of new trucks sold. In addition, there is apparently still a considerable amount of new business left and dealers now are actively getting out and selling trucks. We again hear estimates that truck production will go over a million units this year with sales totaling about 950,000. It is still too early, however, to make any hard and fast forecasts in view of the slump that hit the industry last Fall. There are some observers in Detroit who think both sales and production will fall far behind last year.

END

Please resume your reading on p. 35



"Wanna bet? It'll be a five minute talk on courteous driving, two-minute lecture on care of equipment and a half hour of reminiscence on how he started out as a driver."

Here's Why Fleet Operators Pick FRAM First



"I performed an experiment with Fram Oil & Motor Cleaners on 60 buses and found the filters definitely extend engine life," says southern bus operator. "The efficiency of these filters has cut our operating costs about 50%."

FRAM CARBURETOR
AIR FILTER

FRAM GASOLINE FILTER

FRAM POSITIVE
CRANKCASE
VENTILATOR

BUT, Fram offers you more than famous Oil & Motor Cleaners . . . more than any other filter maker. Fram offers you Complete Engine Protection.

Completeness of Line . . . Fram offers you filters for every fleet job . . . to filter oil, air or fuel on cars, trucks or buses. Cartridges to fit every oil filter made . . . to meet price and performance standards of any method of oil and cartridge change.

Complete Engine Protection . . . The utmost in engine preservation and profit saving. Four great Fram Filters, as shown at left, seal in engine performance and profit . . . seal out abrasives at every vital point and remove corrosives where and when they form. A real lifesaver for fleets is the Fram Positive Crankcase Ventilator that licks sludge, combats dilution and saves engines.

Unconditional Guarantee . . . You can test any Fram Product without risking a red cent. Your money is refunded if you aren't satisfied.

Amazing New Fram Lubri-Graf . . . For the first time, an instant visual check on oil, engine and cartridge condition. Saves you money by indicating cartridge changes only when they're needed. Saves time on fleet maintenance paper work. Increases engine life, gives you lower maintenance cost. Test it! Just send coupon below for FREE Lubri-Graf.

First with Fleets . . . Famous Fram Oil and Motor Cleaner

Husky, rugged, scientific construction with famous Fram Filcron Cartridge for a heart. Removes particles down to one micron (.000039"). Offers highest clean oil flow rate, maximum dirt capacity, longer cartridge life, lowest clean oil cost per mile. Exclusive non-abrasive filtering media won't remove additives from compounded oils. Sturdy metal casing prevents cartridge rupture. Be sure this maximum clean-oil protection is on your fleet.

For Complete Engine Protection

FRAM



OIL - AIR - FUEL

FILTERS



MAIL COUPON NOW

for FREE FRAM Lubri-Graf!

FRAM CORPORATION, Providence 16, R. I.

Please send me FREE Fram Lubri-Graf.

Name

Company

Address

No. of vehicles in fleet

We regularly purchase through

The Overload

Continued from Page 19

similarly crimson. We did a little rule of thumb arithmetic and came out something like this, admitting that the example is purely hypothetical. The New York state registration fee for trucks above 1800 lb net weight is 80 cents per hundred weight. That means that the truck which paid \$140 had an unladen weight of 17,500 lb.

In Michigan the rate for trucks over 6000 lb net weight is \$1.25. That means the 17,500 lb vehicle would pay a license fee of \$218.79. To be sure there is an additional 2 mil per mile tax on common carriers in Michigan so that would add another \$100 for an average of 50,000 miles. (This incidentally is almost entirely equalized by

savings from the lower Michigan gasoline tax rate—3¢ instead of 4¢ as in New York). But the figure is still mighty short of \$3,179 quoted in the report. We'd just like to ask how come?

We mentioned that these figures are purely hypothetical since a vehicle of this size would normally be a combination and subject to a great many ramifications. We are advised, for instance, that a tractor-trailer in New York with a 55,000 lb gvw actually pays \$679.20 before it gets underway. No doubt in Michigan the same rig would cost a little more and, of course, the total taxes in both states are enormously higher. But the true picture still comes a long, long way from both the \$140 and the \$3,179 figures quoted. Nonetheless, these are the figures being given the general public in the daily press.

The New York operators, of course, are not taking the situation lying down. They have formed what is called the Truck Owners Protective Committee of New York State with headquarters at 30 Vesey Street, New York 7. The committee has issued a call for financial and physical aid from all hands; built up a mass of rebuttal evidence, and secured a three-month postponement on the hearings. So the battle is on and the developments will bear watching across the nation.

Phelps' Fantasy

A Travesty on Transportation

ON MARCH 20, just as this issue was going to press, Andrew H. Phelps, vice-president of Westinghouse Electric Corp., delivered an address before the Western Railway Club in Chicago, bitterly condemning what he termed an unfair tax situation between the railroads and highway transportation. Because he and his company feel the way they do about it, Mr. Phelps announced that Westinghouse intends to ship by rail instead of truck *wherever rates and services are comparable*. (The italics are ours).

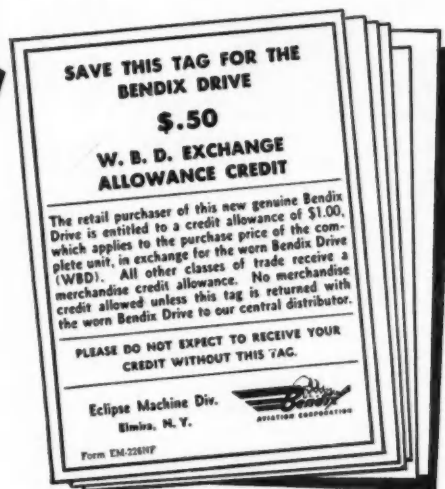
Although the speech was released on the same date to the public press, very few dailies printed more than a few lines. We believe, however, there are parts of it that no truck operator should miss. For they reflect one or both of two things: A. How good the railroad propaganda is, or B. How poorly the truck operators have told their story. Of course it should be remembered, and Mr. Phelps is quite honest about it, that Westinghouse is a major railroad supplier; has little to sell directly to the truck industry.

(TURN TO PAGE 258, PLEASE)

SAVE THESE *Bendix Drive* TAGS

THEY'RE WORTH
MONEY TO YOU!

Smart servicemen everywhere are learning the value of these Bendix Drive tags. They really are worth money to you when they're returned along with your old Bendix* Starter Drives, to the Bendix Drive Central Distributor. And that's not all! Don't forget the profit you make when you install new Bendix Drives. Be sure to see your distributor and stock up with genuine parts today.

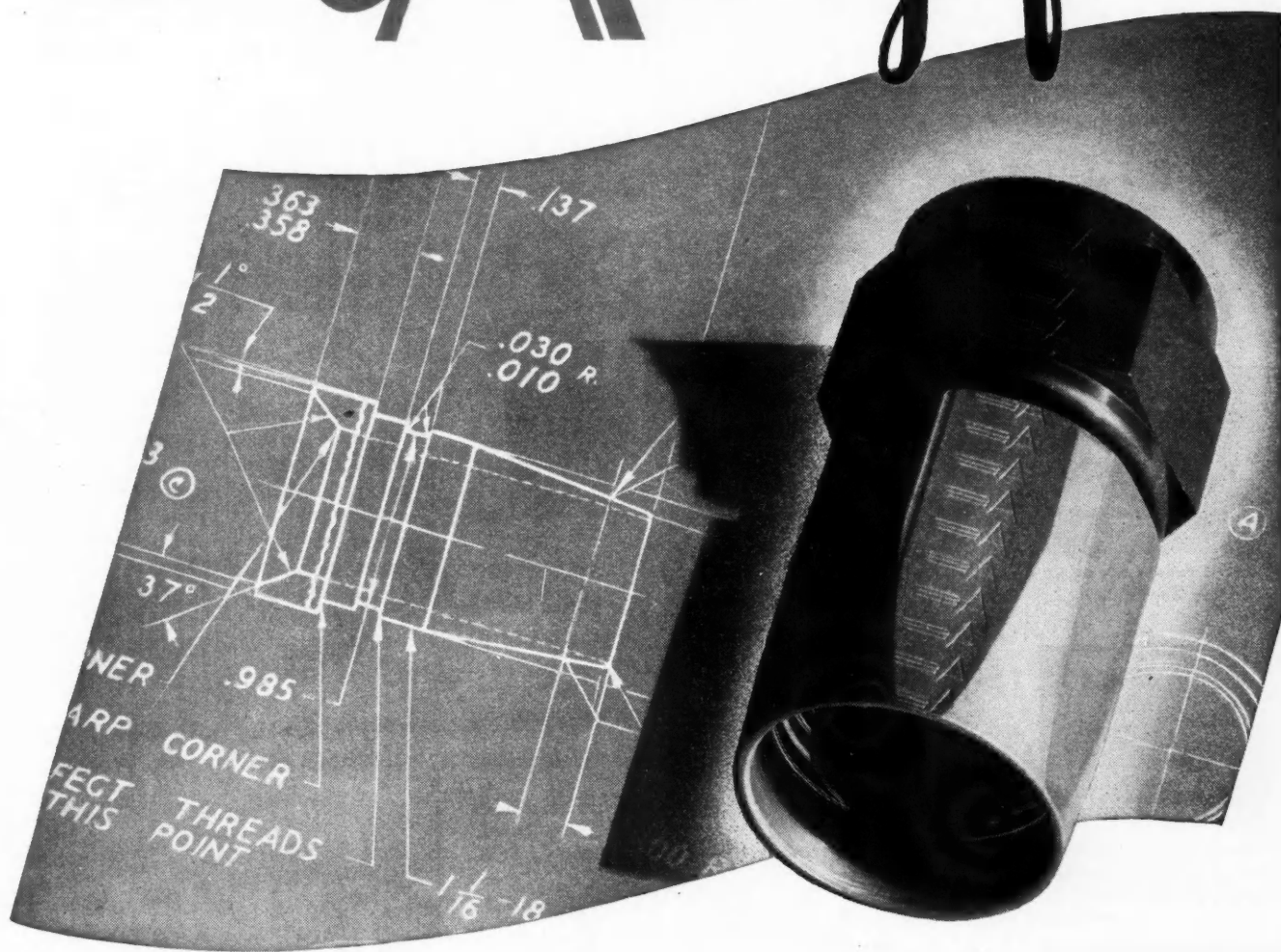


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ELMIRA, NEW YORK

Export Sales: Bendix International Division, 72 Fifth Avenue, N. Y. 11, N. Y.



Always first



Conceived **FIRST**, developed **FIRST**, produced **FIRST**. This is the undeniable record of AEROQUIP DETACHABLE, REUSABLE HOSE FITTINGS. Industry was quick to accept this new and original "Aeroquip Idea." Not only did industry adopt the "Aeroquip Idea," other manufacturers jumped headlong into the manufacture of products they hoped to substitute for Aeroquip Fittings. Imitation is the best form of flattery, but Aeroquip design and quality have never been equalled.

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AEROQUIP PRODUCTS ARE FULLY PROTECTED BY PATENTS IN U. S. A. AND ABROAD

The Overload

Continued from Page 256

Except for a few parenthetical remarks for the purpose of continuity and a concluding comment, what follows are direct quotes from Mr. Phelps' address. We would rather have readers draw their own conclusions, remembering that Mr. Phelps speaks, with obvious personal convictions, for one of the greatest of all American private enterprises:

Tax Interpretation

"A story is told about the tax collector who called on the farmer to explain why it is necessary to collect taxes. The collector told the farmer that taxes are necessary to build and maintain his highways, to provide old-age benefits, to feed him when he's hungry, to take care of him when he's sick, and to bury him when he's dead. The farmer replied by saying, 'I see. It's something like the way I feed my dog. When he comes to me looking hungry, I cut off a piece of his tail and feed it to him.'"

"Taking money from one form of transportation to feed others, even perhaps to the point of bleeding to death an animal that is taxed, is rooted in the same sort of cockeyed economic philosophy as feeding the animal his tail."

"A long time ago railroad operating managements learned that heavily loaded cars, supported by adequate rails and road beds, increased net operating revenues."

"Highway trucking companies have borrowed from the experience of the railroads in that they have constantly acquired bigger and bigger trucks carrying heavier and still heavier loads. Doubtless, as with the railroads, this increased capacity has increased revenues. Unlike the railroads, the trucking companies assume no responsibility for the building and maintenance of their highways. The increase in weight of trucks has far outstripped the capacity of highways to sustain such heavy loads. This means that the public investment in our highway system is being dissipated far beyond the benefit that accrues to the public or to general industry . . ."

"Aided by government subsidies of one kind or another, other types of carriers are diverting from the rails a large volume of traffic, to the serious injury of the railroads. Unless this situation is remedied before materially greater damage has been done, there is a grave threat to the continuance of

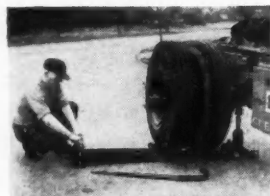
(TURN TO PAGE 260, PLEASE)



SPOT IT—under any axle, from any angle.



SWING IT—Bring dollys into position for removing wheels without lifting.



LEVEL IT—Pull wheels easily without damage to bearings or seals.

WITH SWIVEL ACTION

Do tire, brake and bearing jobs faster—without breaking your back or crawling under trucks. This heavy-duty jack works anywhere—under any wheel. One man does two men's work with a **DRUM Safety JACK**.



Use the **DRUM Safety JACK** for dual wheels, single wheels, or as a floor jack.

- QUICKER
- SAFER
- LIGHTER



DRUM JACK CORPORATION

Subsidiary of The Cleveland Pneumatic Tool Company
3769 EAST 77th STREET • CLEVELAND 5, OHIO, U.S.A.

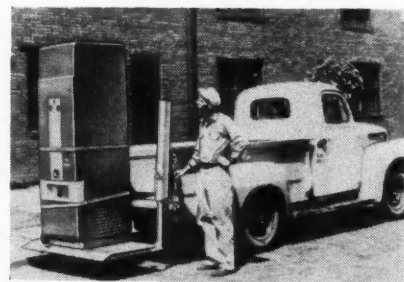
We would like to know more about the **DRUM Safety JACK**.

Company _____

Address _____

City _____

Pick Up Lift Gate Aids Light Truck Work



This new, light weight, "freight elevator" known as a "Pick-Up" Lift Gate which attaches to the rear of any ½ and ¾-ton pick-up truck has just been announced by the "Lift Gate" Division of Anthony Company of Streator, Ill.

The "Pick-Up" Lift Gate operated by two powerful hydraulic hoist cylinders makes it possible for the driver alone to lift or lower or stop and hold at any height as much as 800 lb. It makes it possible for him to load or unload heavy, awkward or frail commodities at curb level or ground level. The single lever safety control prevents merchandise damage and stops resulting provoking delays and claims.

**YOU ALWAYS
HAVE A
WINNER—**

when you choose

PACKARD AUTOMOTIVE CABLE

You can always count on Packard automotive cable to give you a winner—in economy, performance and endurance—on all jobs under all conditions.

Packard is easy to stock—easy to sell. It is widely distributed—nationally recognized. Moreover, it offers more sales helps and services than any other manufacturer. Clearly marked, self-displayed cartons keep cable clean—give complete size, gauge and application data at a glance.

Yes, Packard is the big winner . . . winner in sales—winner in customer satisfaction. For highest quality, for more miles per replacement, stock Packard cable—chosen as standard equipment on more cars, trucks and buses than all other makes.

Packard
REG. U.S. PAT. OFF.
TRADE MARK

Packard Electric Division, General Motors Corporation
Warren, Ohio



DID 'YA KNOW?

A single battery supplies the power for a car's entire electrical system. It's easy to see that the cables carrying this big load must be properly installed, carefully serviced and above all built of fine materials. That's why experienced servicemen stock Packard cables. These men know Packard tops them all for performance, endurance and dependability—carries the battery power on more automobiles than any other make.

Packard Pete



FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING

The Overload

Continued from Page 258

rail transportation in this country as a private enterprise. We must depend upon the railroads to help hold the front-line trenches of industry against nationization . . ."

(Mr. Phelps then cited several highway studies including one made by the State of Illinois playing up the old "saw" about registration fees in relation to ton-miles, following with a dis-

sertation on how the truckers were able to pick and choose their loads, while the railroads have to take all. He concluded that part with these remarks:)

"In competing for high-grade products, the trucker is often able to quote lower rates for selected traffic items because of two factors. The first, already mentioned, is that part of the trucker's cost is from general taxation, through the use of public facilities without adequate payment therefor . . . The second factor is that, with no interest in or responsibility for the movement of low-grade raw materials and other

essentials of production, the trucker has a wider average margin between revenues and costs of service and can afford to shade the rail rates for the high-class traffic enough to obtain the haul."

(He then had some able remarks with regard to flagrant overloading with which unfortunately no one can disagree. Then he began his summation of how to correct the "evils" of the trucking industry:)

Advice to Shippers

"There are certain things which users of transportation can and should do for the improvement of these conditions. One is to assume leadership in stimulating awareness of these conditions and of the necessity, in their own interest, to remedy the damage caused to railroads. There is scarcely an industry in the country—certainly not a heavy industry—which could operate without adequate, efficient, and economical railway service. Anything which injures the railroads is harmful to industry. . . .

"On the legislative level, the most important and helpful step would be to support the enactment of legislation requiring all commercial truckers to pay for their use of highways on a basis commensurate with the cost of the facilities necessary for their operation. One practical step would be the elimination from the Federal Highway Act of 1916 (and amendments) of the restriction against collecting tolls on highways financed in part by federal funds, at least in so far as relates to commercial use of the highways. There is no sound or logical reason why those utilizing public highways for private profit should not pay their full costs. It is manifestly unjust to allow public facilities—highway, river, or other—to be used on terms which create unfair competition with railroads.

"At the same time, there should be such restrictions on truck sizes, weights, and speeds as are necessary to prevent injury to the public highways and to protect the public safety. *The operation of large trucks should be barred by law except on highways specially designed to sustain their weight.* (The italics are ours.) They should likewise be required to pay fees which would fully compensate for the increased cost of constructing such highways over and above the cost if designed for ordinary vehicles. Alternatively, the operators of such trucks might be required to provide their own highways designed for such traffic. If it be argued that the truckers could not afford to continue to serve in the face of such restrictions, then the obvious answer is that the service now rendered lacks economic jus-

(TURN TO PAGE 262, PLEASE)

For Top Flight Gas Welding

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Oxyacetylene Welding Supplies

Time Proved . . . Job Tested

. . . Money Saving

Available from Local Stocks

That's right! Whether you use a popular Airco gas welding rod, flux, or brazing alloy for production or maintenance operations . . . you're certain of top-notch work—ask any one of the thousands of welders who swear by these Airco oxyacetylene welding supplies.

This well-recognized reputation for top performance didn't just happen—more than thirty years' experience and development have gone into the manu-

facture of these outstanding gas welding supplies . . . know-how that produces high quality, reasonably-priced items that guarantee a job done faster, done better, done easier and done at less net cost.

For further information about Airco's oxyacetylene welding supplies which includes a complete line of rods, fluxes and brazing alloys, write your nearest Airco office or Authorized Dealer for a free copy of Catalog 12.



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**NEW SERVICE DIVISION
HEADQUARTERS NOW
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Pioneers of the World's Most Advanced Pistons for Leading Automotive Manufacturers for 35 Years!

Millions of NELSON BOHNALITE AUTOTHERMIC PISTONS have been made and sold to the leading automotive manufacturers for original equipment during the last 35 years. Those many years of accumulated experience in the development and production of these famous pistons, and other GENUINE BOHNALITE PRODUCTS from eleven great plants are your assurance of superior quality and performance when you order GENUINE BOHNALITE PRODUCTS from the Bohn Aluminum & Brass Corporation, Service Division. Jobbers and dealers everywhere are insisting on NELSON BOHNALITE AUTOTHERMIC PISTONS.

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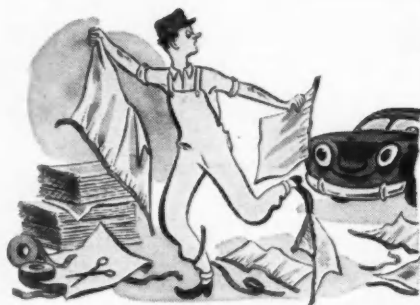
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-  **Valve Springs**
-  **Rod Dippers**
-  **Water Tubes**
-  **Babbitt Metal**
-  **Bolts**
-  **Nuts**
-  **Shims**
-  **Solders**

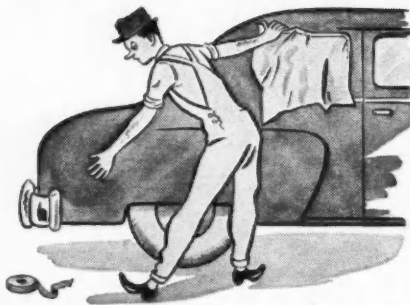


New Booklet!

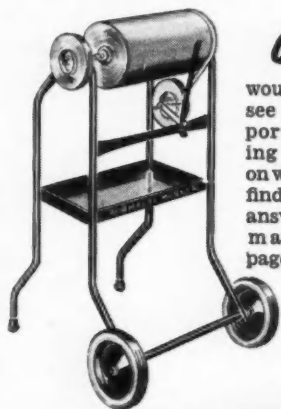
**SHOWS YOU HOW TO
SPEED REPAINT
SCHEDULES—
CUT COSTS—
WITH HELPFUL TIPS
ON MASKING!**



Want to take the mess out of masking? You'll know how when you read page 5!

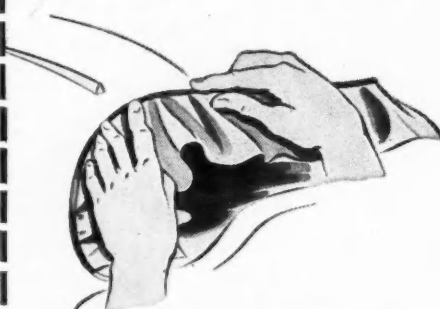


Oh that tape! Want a convenient way to keep it at your finger tips? See page 13!



and...

would you like to see a complete, portable masking department on wheels? You'll find it—and the answer to better masking—on page 10!



For an easy, time-saving tip on masking headlights—just turn to page 18!



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Twenty-five pages of masking procedure, complete description of Permacel's new Portable Masker. Write Dept. 11A at address below.

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MASKING TAPE

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The Overload

Continued from Page 260

tification and that they should not in justice be allowed to continue it, making others help pay their way by shouldering a portion of the costs.

Certainly there is no sound justification for the imposition of a heavy burden upon other highway users or upon the general taxpayers to provide special highways for big trucks and to pay for repairing the damage they do to the highways. The point of special interest for present purposes is that it is mainly, if not entirely, through the use of these big trucks that the operators are able to stay in business, compete with, and often undersell the railroads.

"Again, there is sound justification in the public interest for efforts to overcome the present ability of commercial highway carriers to "pick and choose" their freight. If a trucker wishes to enjoy the benefits of certification as a common carrier, it would appear to be entirely proper that he should be a common carrier *in fact*, as well as in name. He should be required to accept any and all freight within the physical capacity of his equipment to handle, and not permitted to skim merely the cream of the traffic."

(From there Mr. Phelps turned his spotlight on the railroads themselves. After beseeching others to come to their aid, he finally suggested they might do something to help themselves.)

Suggestions for Railroads

"Railroads must explore earnestly and constantly all possible avenues that lead to reduction of costs. While individualism must not be throttled, because from competition among railroads have come major gains to shipper and public alike, individualism must not stand in the way of such measures of cooperation as will reduce costs.

"Then, too, railroad management should explore all possible avenues to increased efficiency. To this need management has become increasingly alert, as is evidenced by progressive diesalization, by increased mechanization, and by other developments. Yet, even more must be done if existing threats are to be effectively met. Never did the rail-

(TURN TO PAGE 264, PLEASE)

OBSERVATION

You can get in the chips without bearing one on the shoulder



*Symbol of **K-H** for Over 40 Years!*

KELSEY-HAYES WHEEL COMPANY PLANTS:

- Four Kelsey Hayes Plants in Michigan
- McKeesport, Pennsylvania • Davenport, Iowa
- Los Angeles, California • Windsor, Ont., Canada



The Overload

Continued from Page 262

roads have more pressing need of discerning leadership than today.

"Since the success of competitive forms of transport is due to service rendered, quite as much as to rates charged, accustomed methods of procedure and performance must at all points be challenged. Operations within terminals, the movement of freight cars within and through yards result

in long delays. It is a known fact among shippers that there are wide differences among railroads in matters of service. There seems to be no reason why the performance of the laggards should not approximate that of the best with respect to service matters.

"Still further improvement in the safe handling of freight must be effected. Much has been done since the war. Shippers have given, and will continue to give, a large measure of assistance by adequate packing and stowing. The railroads, through improved supervision

and careful education, can reduce the tremendous costs of loss and damage claims. By way of illustration, one company was suffering excessive damage claims on a nationally distributed product. Analysis showed that half of all loss and damage suffered occurred to shipments which moved in connection with one small terminal line. When the management of this terminal carrier was alerted, steps were taken which almost overnight eliminated half the damage claims on this product.

"Some railroads have sought to supplement rail operations with operations upon the highway for local pickup and delivery. This has often resulted in improved service and reduction of costs. Greater efforts along this line should be made by railroad management to coordinate highway and rail service to provide a complete and speedy service to the shipper. Either through a greater degree of coordination, or *integration under single ownership*, such joint operations should be extended." (The italics are ours.)

"All hope for the railroads is not lost. They can do a very great deal in curing their own ills.

"First, it must be recognized that trucks have a definite and proper place in transportation. They provide speed and service on short hauls. The railroads may, perhaps to their own advantage, adjust rates to encourage trucks in the short haul and to discourage them on the long haul.

"Second, the level of class rates is generally out of adjustment with commodity rates. Certainly successive increases in rail rates aggregating approximately 57 per cent since the war

(TURN TO PAGE 266, PLEASE)



(GEIGER-KNIGHT CREEPER)



("LITTLE JOE" HANDY SEAT)

Take This Tip from Crack Service Manager Ray Allison —

"Help Your Men Work Faster and Easier With These Pieces of Efficient Equipment"

As Service Manager of Jerry McCarthy of Detroit, one of the world's largest Chevrolet Dealers, Ray Allison has the same problem that you have—

How to help his Service Men work at top efficiency.

Here's one way he does it—just like you see in the two pictures above—

He gives his Men the best possible equipment so that they can work faster and easier.

He provides them with Geiger-Knight Auto Creepers—the Creeper which . . . because of its famous patented casters and patented* stamped steel wheel housings . . . works faster and easier, especially over rough floors.

He provides them with Geiger-Knight Little Joe Handy Seats . . . which enable his men to repair brakes faster and easier than anything else he has tried.

Are you missing these two excellent Geiger-Knight bets? Take Ray Allison's tip. Find out about them today.

* Patent Pending

Write Today For FREE CATALOG

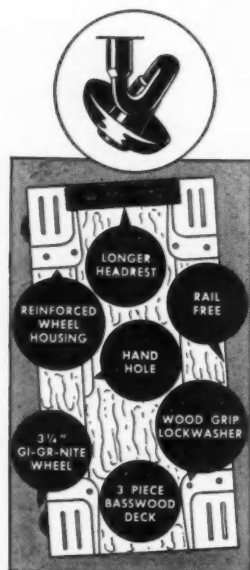
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Television Trailer

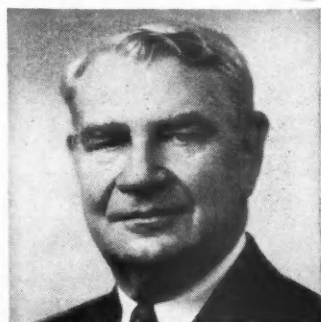
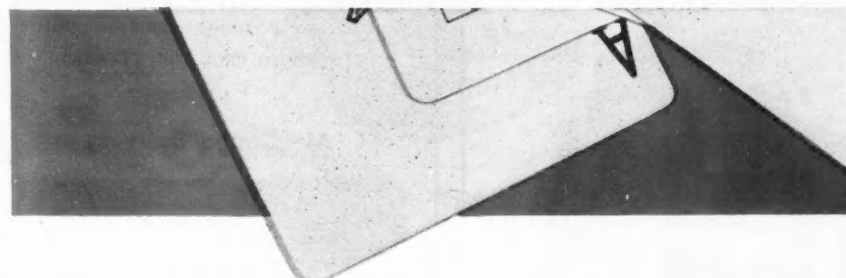


Chances of a serious delay in reaching telecast scenes have been eliminated by Philco Television Station WPTZ in Philadelphia by use of a tractor-trailer combination for mobile telecasting. Should the tractor fail for any reason prior to any on-the-spot telecast, another tractor can be coupled to pull the transmitter-trailer to the scene of the event. Trailer was manufactured by Trailmobile Co. of Cincinnati

Best Bet..



FITZGERALD Metallic Aluminum-Fused-Oxide Steel Asbestos GASKETS*

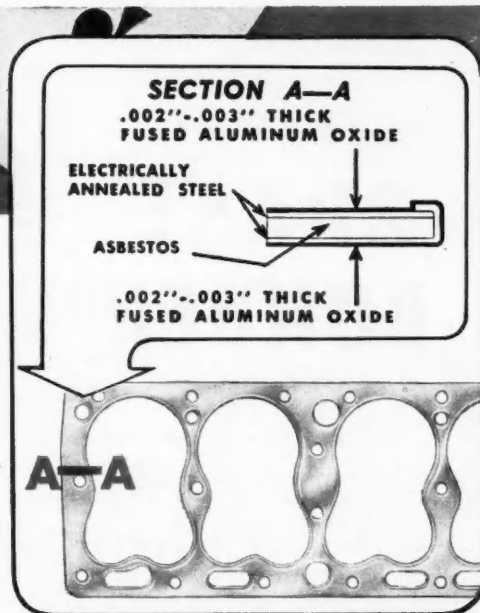


A perfect seal is in the cards with Fitzgerald Metallic Aluminum-Fused-Oxide Steel Asbestos Gaskets.* They top all others in high compression engines because they're engineered to withstand the greater heat and pressures that cause other gaskets to fail.

Steel, especially tempered for toughness and resiliency, provides the vital strength. Fused aluminum oxide prevents rust, means easy removal. Top quality asbestos filler rounds out the perfect combination . . . the result of nearly half a century of gasket craftsmanship.

J. J. Fitzgerald
President

THE FITZGERALD MANUFACTURING COMPANY
Torrington, Connecticut



FITZGERALD
Gaskets
SINCE 1906

Grease Retainers—Cork Gaskets—FITZ-Rite Treated Fiber Gaskets for oil, gasoline and water connections
COMPLETE SETS FOR MOTOR REBUILDERS
*Service Mark Registration Pending

The Overload

Continued from Page 264

are conservative when compared to other price increases. The four general rate increases granted since the war have been percentage increases, however, with the result that charges upon the high-rated traffic now are out of line and make that traffic most attractive to trucks.

"For example, it probably costs a railroad little more, if any, to trans-

port a carload containing 100,000 lb of machinery from New York City to Los Angeles than it costs to move a 30,000-lb carload of carrots. Yet the carload of machinery would pay \$3,660 in freight charges, while the carrots would pay \$603, or about one-sixth as much. The carrots would move in expedited freight service, obviously more costly to the railroads, would require extra switching for service en route, and would require a more costly type of car.

"Let us take another example. A carload of oranges weighing 39,200 lb mov-

ing across the United States would pay \$694 in freight charges. A carload of ordinary lamp bulbs weighting 15,000 lb, less than half as much, would pay \$716. The carload of fruit requires a special-type car far more costly than that required for lamp bulbs.

"A 60,000-lb carload of lumber moving from Baker, Ore., to Jersey City, N. J., would pay \$716 in freight charges. The same weight of elevator machinery moving the same distance would pay \$2,196. Trucks would not haul the lumber, but they do solicit the machinery which pays a rate three times higher.

"What can be the result if the railroads leave themselves exposed to the loss of their profitable traffic to the motor carriers? There is one inevitable result of operating a business without profit. . . .

"By reason of recent freight rate increases, it is presumed that low-rated products now pay their own way—or more nearly pay their own way. Is it unreasonable to expect that high-rated products of our mills—some might say overrated—should be adjusted to meet competition? Such a move would be in the interest of the railroads, or of industry at large.

"This situation would not be so alarming were it not for the fact that this most desirable of all traffic, the high-rated manufactured goods, is being most actively sought and is shifting

(TURN TO PAGE 268, PLEASE)

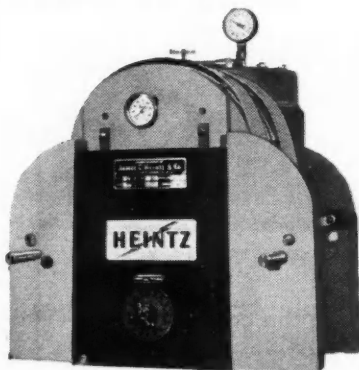


BRAKE LINING REPLACEMENT COSTS

WITH THE

Sensational New

**HEINTZ
ELECTRIC
BRAKE
BONDER***



***FEATURING . . . FOLLO-THRU PRESSURE**

Bonded brake linings offer from 30% to 100% more lining life. Take advantage of the important savings to be effected by switching *your* fleet to bonded linings NOW!

Make that money-saving change with the finest bonding equipment available . . . the HEINTZ ELECTRIC BRAKE BONDER, the bonder that research built; the bonder that, due to its revolutionary new heat and pressure application principles, is so far superior to all others that it is acclaimed by truck manufacturers, lining manufacturers and fleet owners alike as THE answer to replacement bonding.

For full information write or wire today to:



THE **HEINTZ** & CO.
JAMES C. INC.

West 143rd Street at Lorain Avenue, Cleveland 11, Ohio

30 Years' Experience in the Manufacture of Automatic Heating Units and Controls

Air Cargo Delivery



The Fredrickson Air Rush White tractor-trailers shown in the upper view, is a typical unit of the new state-wide ground link service for air cargo, now operating in North Carolina. Textile products are picked up and delivered daily, to the Charlotte airport for transport by air to the West Coast. Progress is illustrated by the comparison with the White truck and touring car, shown directly above, which were used in the early twenties, by the U. S. Airmail Service for their ground delivery service

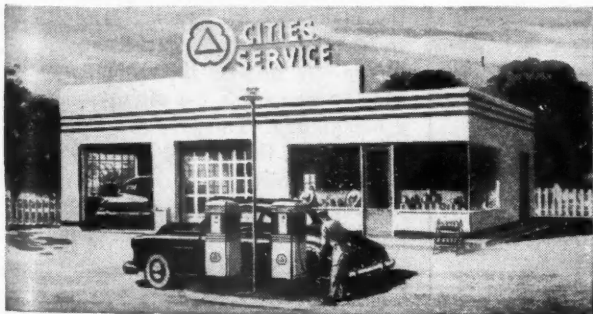
It's the Best Motor Oil known to Science



(Partial view of the enormous new lubricating oil plant at Lake Charles, La., where this great new oil is processed.)

"ANTI-FOULING" OIL made by the Remarkable new "HEART-CUT" PROCESS

This new oil—the best known to science...
gives you a cleaner engine...more economy
...minimum carbon residue.



It's here now! The remarkable motor oil from the giant new \$42,000,000 lubricating oil plant at Lake Charles, La. The plant that's been the big talk of the oil industry for months.

New Premium Koolmotor is made by the unique "Heart-Cut" Process which retains only the choicest part of the finest crudes. *It's so superior that in recent engine tests it outscored nine other major premium motor oils.* No wonder Premium Koolmotor is better in every way! Cleans better, seals better, cools better and fights acid, sludge and corrosion far more effectively. Switch to this remarkable new oil today.

start saving Dollars today...stop at

CITIES SERVICE

The Overload

Continued from Page 266

from the rails to highway transportation. . . .

"Next, railroads can and must improve their service. It is imperative that they do so to prevent further inroads on their desirable traffic by highway competition. It should be borne in mind by railroad management that it will not be easy to regain traffic that

is lost by reason of poor service. . . .

"Now—to give point to the sincerity of our convictions on this matter of rail and highway transportation, let me add one word. For the past two years this subject has had intensive study in the company I represent. On December 6, 1949, our studies led to the announcement of policy to our management and traffic personnel which said, in effect:

"(1) Railroads are to be used for all Westinghouse shipments unless trucks offer important advantages in services or lower rates.

"(2) Whenever truck rates are lower than rail rates, the railroads are to be given an opportunity to make adjustment which will enable us to ship by rail at competitive rates."

That is the conclusion of Mr. Phelps' speech. Had we more room, we could, of course, take rather violent exception to many of Mr. Phelps' remarks, particularly those implying that very shop worn phrase about a "Free ride for trucks." But we would prefer, as stated in the beginning to let the operators draw their own rebuttal. We'd just like to end up with this poser: How much of Westinghouse freight moves by truck in spite of the desperate effort the company is making to support its rail customers? When we tried to get the answer we were told that that information "would, of course, be highly confidential." But we understand there is good reason to believe the percentage is very substantial.—C.B.R.

END

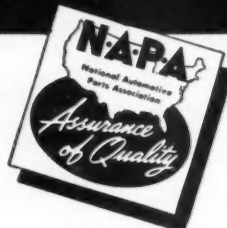
Please resume your reading on P. 23

FEDERAL BALL BEARING OF THE MONTH



from the most
complete automotive
ball bearing line
anywhere!

The superfine race finish in the Federal Clutch Release Ball Bearing Line prevents overheating. The U-type ball retainer in the pure thrust type seals-in and holds the original grease in the race-ways . . . assures permanent lubrication to rotating balls without leakage. Federal Clutch Release Bearings are made in every original equipment size.



Add Up These Advantages of FEDERAL BALL BEARINGS

1. Complete coverage—Immediate Jobber service backed by complete warehouse and factory stocks near you.
2. Original equipment acceptance—Proof of quality and customer satisfaction—a powerful sales tool.
3. Obsolescence protection—Every bearing in the Federal line is classified according to market demand and fully protected against obsolescence.
4. Complete application catalogs—include all automotive equipment through 1949 and latest complete interchange information.
5. Complete price information—Easy-to-read and complete suggested re-sale schedules at competitive prices.

★ Order FEDERAL BALL BEARINGS

from Your
NAPA Jobber
or Warehouse



FEDERAL BALL BEARINGS

THE FEDERAL BEARINGS CO., INC., Poughkeepsie, N. Y.

ONE OF AMERICA'S LEADING BALL BEARING MANUFACTURERS

Quality Since 1908

RANDOLPH'S RIDDLES

Tool Conversion

Ever wish you could change one tool into another? Here we show you how it can be done in seven moves. Beginning with the word JACK, simply change one letter at a time and form a new word each time according to the definitions until the word PUMP is reached.

JACK	
Bundle	----
Step	----
Glass	----
Corn bread	----
Apple	----
Splendor	----
PUMP	

Answer on Page 270

RANDOLPH'S RIDDLES

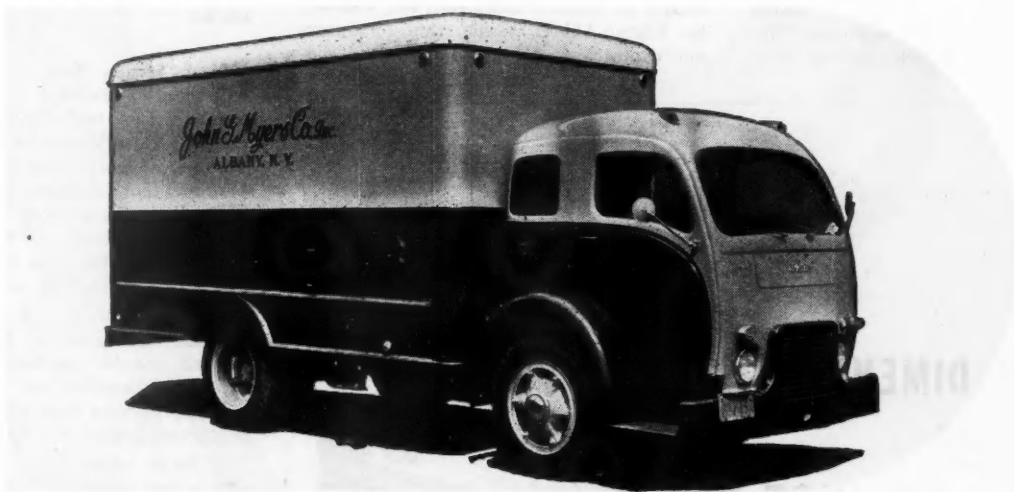
Rookie 'Rithmetic

Five rookie mechanics had to identify the makes of five trucks. The trucks were numbered from one to five. Each rookie had to pick the right name for each truck from a list of five names on a blackboard. The first rookie got one name right, the second got two names right, the third got three names right, the fourth got four names right, and the fifth got five names right. What was their average score?

Answer on Page 270

A 130-Horsepower Billboard

THAT MAKES AN IMPRESSION



It will be a good impression if you have a **DeVilbiss Complete Paint Shop**

Pre-sell your company's good name to people who know you only by seeing your trucks on the road. Re-sell your company's reputation to regular customers who see your trucks often. Neat-looking, well-maintained trucks help sell your company, help sell your product.

In the well-lighted, well-ventilated DeVilbiss Complete Paint Shop, your maintenance men can turn out professional repaint and maintenance jobs right on schedule. There's no danger or annoyance

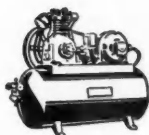
from paint fumes floating into the rest of the shop, nor of dirt marring fresh-finished surfaces. The DeVilbiss Complete Paint Shop includes: DeVilbiss Air Compressors, specially designed to give you even more air for your money . . . DeVilbiss Spray Guns which are preferred by the majority of professional painters . . . DeVilbiss Hose, fabricated to stand up under severe spray painting service. All the other accessories included in this modern paint shop are made by DeVilbiss—leading manufacturer of spray-painting equipment.

Write today for the complete DeVilbiss catalog.

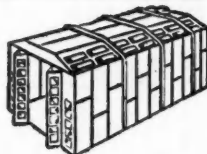
THE DEVILBISS COMPANY • Toledo 1, Ohio
Canadian Plant: WINDSOR, ONTARIO



Spray Guns



Air Compressors



Spray Booths



Hose and Connections

DEVILBISS

means Quality in all four..



**SPRAY EQUIPMENT
EXHAUST SYSTEMS
AIR COMPRESSORS
HOSE & CONNECTIONS**

INDUSTRY BRIEFS

Achieving the best safety record in its history, General Motors was recently granted the National Safety Council's award of honor for distinguished service to safety. The company-wide accident rate (number of accidents per million man hours worked) for General Motors in 1949 was 2.57, an improvement of 19 per cent over the 1948 record. Under regulations of the American Standards Association, this is the lowest rate ever achieved by GM employees. The same is true for the 1949 severity rate

(number of days lost per thousand hours worked) which was .428 representing a 22 per cent improvement over 1948.

Brown Equipment & Manufacturing Company, with headquarters at 1775 Broadway, New York City, and plants at Charlotte, N. C., Syracuse, N. Y., Springfield, Mass., and Taunton, Mass., has joined TTMA as a trailer manufacturing member.

International Plainfield Motors, subsidiary of Mack Trucks, Inc., has awarded to Wigton-Abbott Corporation, engineers and contractors of Plainfield, N. J., a con-

tract for the design and construction of a large modern addition to its present manufacturing plant in Plainfield.

Hunt-Spiller Mfg. Corp. announces that they have re-entered the brake drum manufacturing field with a new material that eliminates heat-checking in almost all cases and substantially reduces squeal. In addition, this material is giving exceptional wear on actual applications with commercial fleet operators of buses and trucks.

Nash Motors' first Canadian built car will soon be available to Canadian motorists, according to George W. Mason, president of Nash Motors of Canada Limited, Toronto. According to T. S. Adams, Nash Motors Plant Manager, Toronto, "Interior work on the new manufacturing plant is nearing completion. When completed, it will be one of the most modern automotive plants in Canada," he said.

All construction work on the new plant is being carried out by Canadian workers and all possible production machinery is being purchased in the Dominion. Nash will employ more than 300 Canadians when production begins this Spring, he said.

A large replacement parts warehouse, with a floor space of 23,500 sq ft, is being built on the factory site, to assure availability of parts for Canadian Nash owners.

Radiator Specialty Co. of Charlotte, N. C., will very shortly complete installation of a Rubber Products Mill within the factory grounds at Charlotte.

Russell Mfg. Co., Middletown, Conn., will establish a branch manufacturing plant at Lexington, S. C., for the production of nylon and cotton narrow elastic fabrics.

The Vac-U-Matic drainer drains crank-cases and oil filters; syphons off radiator solutions; removes water from fuel tanks and operates by vacuum off any airline. Supreme Equipment Corp., Cleveland, Ohio.

A NEW DIMENSION IN CLUTCH SERVICE

You get *more miles* of trouble-free service from these new, complete clutch units. Take *less time* to install, too! And you're *sure* of full clutch release and smooth clutch engagement.

Cost the Same . . .

. . . although you pay only the *regular* price for the new Accurate Powerflex clutch plate and the rebuilt Re-Nu assembly, you get the *PLUS VALUES* of a matched, mated, tested, balanced, complete clutch unit at *no extra cost!*

Write for **FREE Catalog & Prices!**

**EXCHANGED OR SOLD OUTRIGHT!
FOR ALL POPULAR CARS AND TRUCKS**

Accurate PARTS MFG. CO. 12435 Euclid Ave.
Cleveland 6, Ohio

MANUFACTURERS OF THE POWERFLEX CLUTCH PLATE

REPLACEMENT UNIT CO. 1505 Rockwell Ave.
Cleveland 14, Ohio

REBUILDERS OF GUARANTEED CLUTCH ASSEMBLIES



Consist of a

New **POWERFLEX** Plate

PACKAGED TOGETHER WITH A

Rebuilt **RE-NU** Assembly

MATCHED • MATED • TESTED

BALANCED • COMPLETE

CLUTCH UNITS



Tool Conversion **SOLUTION**

JACK
PACK
PACE
PANE
PONE
POME
POMP
POMP

Rookie 'Rithmetic **ANSWER**

3.2—The fourth could never get four names right without getting the fifth one right also. If you noticed this discrepancy in the statement and refused to go ahead with the problem on account of it, you may also consider yourself right.



Losing your shirt on maintenance?

IF a large part of maintenance expense goes for engine repairs, chances are, Quaker State HD Oil could save you money!

Quaker State HD Oil is specially made to prevent wear in heavy duty use. Made from 100% pure Pennsylvania grade crude oil, it's refined with the most modern processing equipment and with technical skill

unsurpassed in the industry.

Even under toughest operating conditions, it keeps its body, lubricates thoroughly, protects every friction surface. It helps prevent formation of sludge, gum, varnish—actually *cleans* as it lubricates!

There is no finer engine lubricant, so switch over to Quaker State HD Oil—and keep 'em rolling!

**QUAKER STATE
HD OIL**

AND SUPERFINE LUBRICANTS

Use Quaker State HD Oil for trucks, buses, taxis, tractors.
Use Quaker State Motor Oil for passenger cars.

QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.

COMMERCIAL CAR JOURNAL, April, 1950

FACTORS AFFECTING

Torque Converter Operation

A review of general characteristics, correct application, and maintenance training pointers to gain maximum benefit from that increasingly popular component transmission unit

By Robert S. Lee

Twin Coach Co., Kent, Ohio

Streamlined Beauty

Built For

Heavy Duty

THE NEW

LORRAINE

Driving Light



Safety . . . convenience . . . beauty . . . rugged durability—they're all combined in the New Lorraine—more than ever the World's Finest Driving Light.

A flick of the fingertips controls the exclusive Lorraine Rotary Switch. The sealed beam lamphead rolls smoothly, continuously, through a full 360-degree radius. Lorraine Wireless construction guards against shorts.

For better vision on the highway, more convenience in town—*greater safety anywhere*, outfit your fleet with Lorraine Driving Lights. Write for detailed information and name of jobber nearest you.

New Lorraine Utility Light For Roof Mounting



Lamphead turns full 360-degrees both horizontally and vertically. Equipped with leak-proof bracket. Illuminates working areas to the front, rear, left, right or on the ground. Ideal for maintenance vehicles, wreckers, service vehicles, snow-plows and utilities trucks.

THE ADVANTAGES obtainable by the use of torque converters can be fully attained only when all factors affecting their operation in each particular instance are taken into consideration and carefully balanced. The torque converter is only one unit in the power train, and the importance of matching engine characteristics, rear axle ratios, and average road speed requirements cannot be over-emphasized.

General Characteristics

CERTAIN fundamental principles of operation of the hydraulic torque converter govern its application to today's transit problems. The true torque converter is not a fluid coupling but a torque multiplier. It provides rapid acceleration, and an infinite number of torque ratios, and the torque supplied by the converter is governed by vehicle requirements.

We speak of maximum torque multiplication as approximately 5.5 to 1 at "stall." "Stall" simply means that the engine turning the turbine pump is running at full throttle, zero manifold vacuum, while the turbine rotor wheel is held stationary. As the rotor wheel begins to turn, the ratio of torque multiplication decreases as rotor speed increases and the spread between input and output speed diminishes.

In actual operation, the coach begins to roll when engine speed is increased to 400 rpm. If the throttle is opened fully, engine speed rises rapidly to around 1200 rpm, and then increases gradually to 1800 to 1850 rpm as coach road speed and turbine

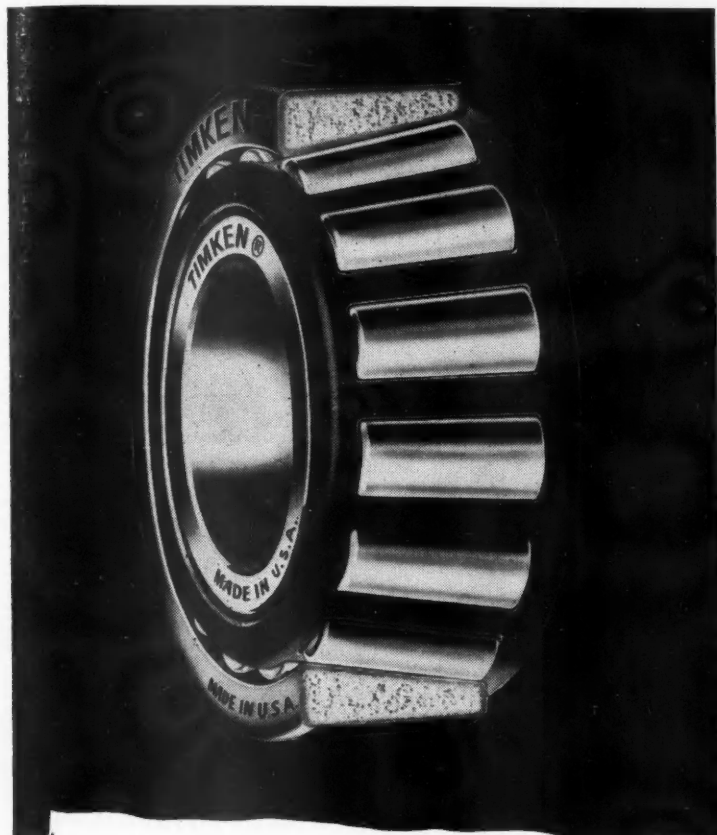
(TURN TO PAGE 274, PLEASE)



APPLETON ELECTRIC COMPANY

Manufacturers of Appleton and Lorraine Spotlights

1724 WELLINGTON AVENUE • CHICAGO 13, ILLINOIS



Beats friction

In actual service the Timken® tapered roller bearing does all those things a perfect bearing should do.

There are many good reasons for this: Timken bearings have true rolling motion. With full line contact between rolls and raceways, they retain their full friction-reducing qualities under the heaviest loads. And tapered construction enables Timken bearings to take radial and thrust loads—or any combination.

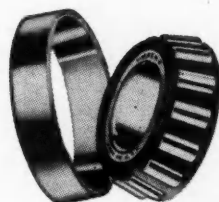
Only Timken tapered roller bearings have all these advantages: (1) advanced design, (2) precision manufacture, (3) rigid quality control, (4) special analysis steels. They are first choice with leading truck manufacturers.

Make sure the tapered roller bearings you use for replacement always are marked "Timken". And send now for the free booklet, "Timken Tapered Roller Bearings, Their Care and Maintenance". Write Dept. JC-4, The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

*Another reason why
TIMKEN® bearings are first choice
with truck manufacturers*

**SINCE THEY'RE BEST
WHEN THE TRUCK IS
NEW, THEY'RE BEST FOR
REPLACEMENT, TOO!**

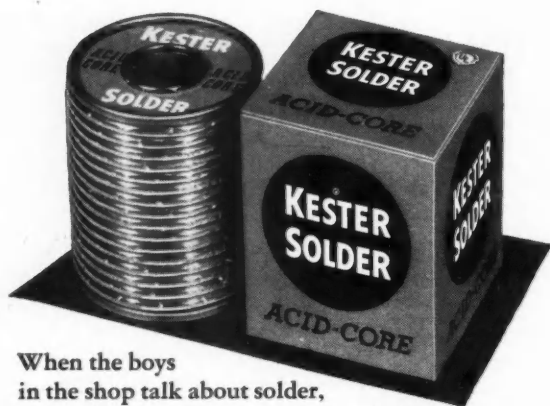
TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER ◐ BEARING TAKES RADIAL AND THRUST → ◐ ← LOADS OR ANY COMBINATION



Kester Solder



When the boys
in the shop talk about solder,
they talk about Kester Acid-Core Solder;
the old reliable product now in a new package.

Easier to Use

Mechanics know that using Kester makes any soldering job easier. Kester contains more grade A newly mined Tin—40%—and only virgin lead, too. The fluxes are chemically and scientifically correct.

Faster

Kester is faster to use. Mechanics prefer it and are more satisfied when using it. The work is speeded up and output is increased.

Kester Solder Company
4201 Wrightwood Ave., Chicago 39
Newark, N. J. • Brantford, Canada

**KESTER
SOLDER**



The Mechanics Standard since 1899

Torque Converter Operation

Continued from Page 272

rotor speed increases. When the speed of the turbine rotor reaches a value approximately $\frac{2}{3}$ that of the engine and pump, the converter is operating at maximum efficiency.

From a standpoint of economy, the shift from turbine to direct drive should be made as close to this point as possible. However, load factors and grade conditions in certain instances make a shift at a slightly higher speed, where the torque ratio is approximately 1:1, more desirable.

An automatic gear type shifting mechanism is used to obtain the change from turbine to direct drive to eliminate the difficulties encountered with a friction clutch. The shift from turbine to direct drive is electro-pneumatic and is controlled by a fly-weight governor driven by an internal gear turning at drive shaft speed. Balking shoulders are provided within the direct drive unit to delay the meshing of the clutching teeth until the shaft speeds are synchronized. This synchronization is obtained by means of an air-operated electrically controlled throttle dip actuated by the shift fork.

When engine speed falls below drive shaft speed, a roller clutch within the direct drive unit unlocks the balk mechanism and permits the meshing of the clutching teeth. Smooth engagement is attained through the incorporation of a simple synchrolock.

(TURN TO PAGE 276, PLEASE)

Custom Built Wrecker

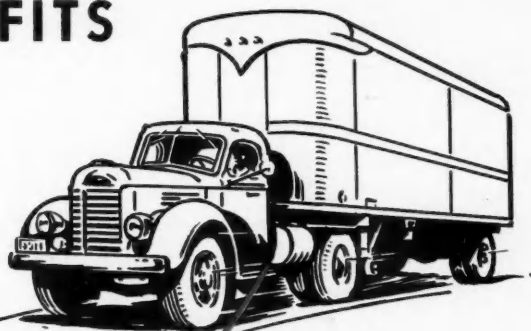


Designed for the New York City Department of Sanitation, this Ward La France 6x4 tandem drive, COE wrecker features a double alloy steel heat-treated frame, and aluminum cab. It is equipped with two rear 10-ton winches, pintle towing hook, two hydraulic stabilizer jacks, front bumper and pusher plates, spot and warning lights. Unit is powered by a 779 cu-in. gasoline engine

ON THE ROAD TO PROFITS

Prior

SAFETY TANKS



1. Easier Mounting
2. 12-Gauge Steel
3. Electrically Lap Welded
4. Pickled and Oiled, Rust Resistant
5. Quick filling
6. Fill Vent to prevent expansion overflow
7. Ball Check and Seat in Cap to prevent leakage in event of truck upset.
8. Pilfer-Proof Baffle
9. Brass Filler Cap, Swiveled and Chained
10. Safety Flame Fuse Plug—Replaceable
11. 1/2" Drain Plug in bottom
12. Fully Dished Heads
13. 5/16" Fuel Line with Pick-up close to bottom
14. Brace for Pick-up Line, Welded in place
15. Anchor for Pick-up Line, Welded in place
16. Pressure Tested for Safety
17. Listed under Underwriters' Laboratories, Inc. Re-examination service
18. Rust Proof Prime coated
19. Guaranteed against defects in materials and workmanship
20. Guarded Fuel Line Outlet

Shave operating and maintenance costs—and you add to profits. This is the principle on which *Prior Safety Tanks* are designed. All Prior Safety Tanks are as well-finished and attractive as any part of your modern truck or trailer, and can be furnished in either the OB-Round or Cylindrical type. OB-Round tanks hug the frame, and there is no frame drilling or welding necessary on any Prior tank.

**A stock size to fit every need—or
we build to meet your requirements**

MAIL TO THE NEAREST ADDRESS

PRIOR PRODUCTS, INC.

Box 349, Middletown, Ohio
Box 7608, Dallas, Texas.

Please send me complete information on Prior Safety Tanks

NAME _____

STREET _____

CITY _____ STATE _____

"MILEAGE MASTER" COMES IN FOUR SIZES: 105, 120, 135 and 150 GALLONS



**"MILEAGE
MASTER"**
RELIEVES TORQUE

Torque Converter Operation

Continued from Page 274

Correct Application

SUCCESSFUL performance in any particular vehicular installation is dependent on the careful matching of engine to converter, and converter to rear axle ratio.

Not just any engine will operate successfully with a torque converter. Certain basic characteristics must be

designed into any power plant destined for use with a converter. The engine should deliver a consistent high torque throughout a broad range of speeds. It should be able to deliver high torque at low rpm's, and should be able to maintain this high torque output throughout the entire range of operating speeds in turbine and direct drive.

THE *Whitney Safety* SIGNAL COULD PREVENT THIS



- THE WHITNEY BRAKE FLUID SIGNAL
- WARNS THE DRIVER WHEN FLUID IS LOW
- WHEN A BRAKE LINE BREAKS
- EASILY INSTALLED ● FITS ALL CARS & TRUCKS

The WHITNEY BRAKE SIGNAL provides the **ONLY** means ever offered the driver of knowing when brake fluid is low or when a brake line breaks while the car or truck is in motion. This patented signal is as simple as it is economical—a switch in the master fluid reservoir lights a red button on the instrument panel when the danger point approaches—when the brake fluid needs attention.

The WHITNEY BRAKE SIGNAL has been thoroughly tested on leading truck fleets and hundreds of passenger cars. Time after time, serious and costly accidents have been prevented because the Whitney Signal gave warning in time.

For full details write, wire, or phone

BALDWIN ELECTRIC COMPANY
1212 JACKSON ST. • TOLEDO, OHIO
TEL.: ADams 3286

It has been pointed out that when accelerating in turbine drive, engine speeds jumps quickly from idle to around 1200 rpm, and then increase gradually to around 1800 rpm. Therefore, a properly matched engine should develop a torque curve whose peak is almost flat through this range. It is a well-known fact that certain power losses occur within the torque converter in turbine drive and that maximum operating economy is attained only by keeping the period of running time in turbine at a minimum.

Ability to accelerate rapidly is another "must" in the ideal engine. In addition, the engine must be capable of high-speed operation to permit a flexibility in the selection of the rear axle ratio best suited to the particular application.

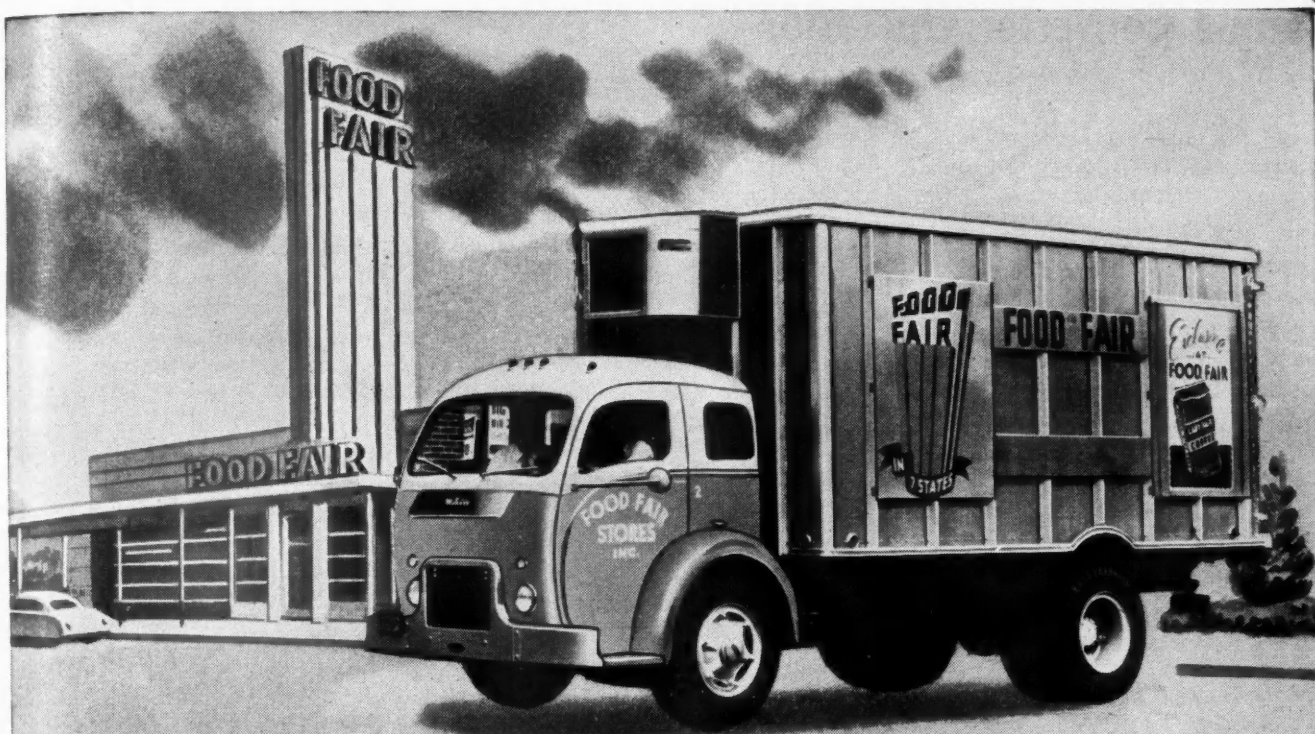
Recent surveys made by Twin Coach Co. have shown that, in large city operation and normal city traffic, motor coaches operated at speeds under 25 mph 75 per cent to 80 per cent of the time, and that they operated at 35 mph only 5 per cent of the time. Operators should make careful checks of average operating speeds, average load factors, and grade conditions when determining the rear axle ratio to be used in connection with a torque converter.

By using a "slow" ratio, say 7 2/5:1, rapid acceleration with a minimum period of operation in turbine drive is attained, for the converter shifts to direct drive at approximately 14-16 mph with this ratio. Of course, top speed is lowered, but this is where the high-speed engine has the advantage. By the use of an engine which can be operated at 2600 rpm, and up to 2800 rpm when required, a top road speed high

(TURN TO PAGE 278, PLEASE)



"D'ya fix flats?"



No Other Truck So New! So Useful... So Economical!

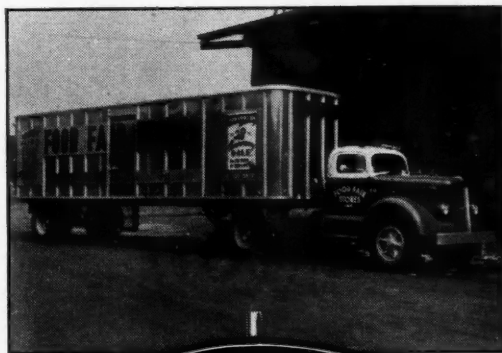
FOOD FAIR STORES speed the flow of perishable foodstuffs from warehouse to customer by White Truck... depending on their fleet of carefully selected Whites to handle this complex food transportation job.

Narrow streets and heavy traffic in congested areas provide a real test for the *entirely new White 3000*... and results have been amazing. These new Whites get in and out of congested places in far less time... with greater ease... and with new safety. They save time and reduce costs in every phase of delivery service. See your White Representative for facts about the economy and efficiency of this great new White.

THE WHITE MOTOR COMPANY

Cleveland 1, Ohio, U. S. A.

THE WHITE MOTOR COMPANY OF CANADA LIMITED
Factory at Montreal



FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

Torque Converter Operation

Continued from Page 276

enough to meet the needs of large city operation is easily reached. For example, with the 7 2/5:1 axle, speeds of 40-43 mph are possible.

Research experiments with racing vehicles and racing craft are continuously being carried on by Twin Coach Co. and Fageol Products Co., builders of the Fageol Twin Coach Engine, to further perfect the light-

weight, high-speed high compression engine.

Maintenance Training

IN THE case of almost all motor coach drivers and mechanics, the torque converter is something new and strange. If they are to use this new tool to its best, most economical advantage, adequate training must be given.

**It's not the
container size
that counts...**

*it's the
filtering surface!*

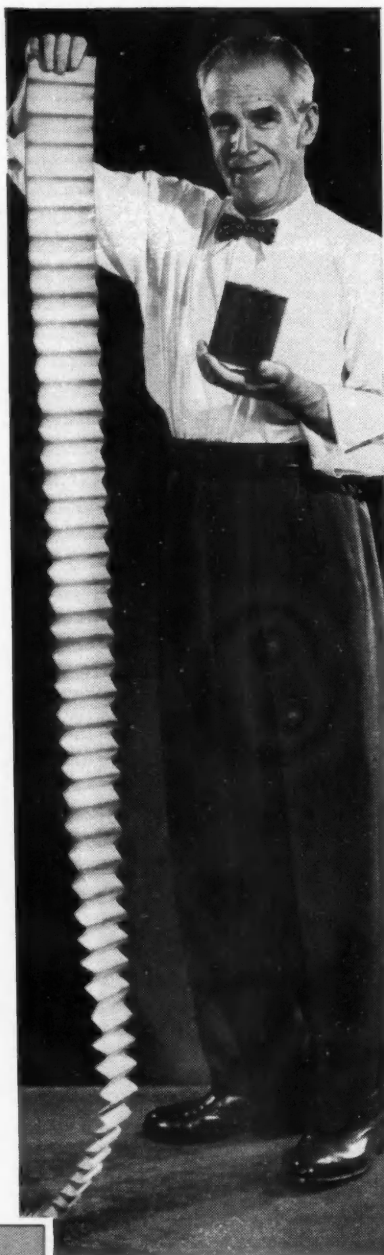
**That's why the accordion
element in Purolator's
Micronic* Oil Filter removes
290% more abrasives...**

Just look—this smallest automotive-type Purolator Micronic* element... although no larger in container size... has 570 square inches of effective filtering surface as compared to 54 square inches in ordinary filters!

Purolator engineers perfected this element so that it filters particles measured in microns (.000039 of an inch)... removes an average of 290% more abrasives as proved by competitive test results.

This means you get faster, more complete filtering of all the sludge and abrasives... resulting in fewer engine repairs and less down-time. And that's why it will pay you to let your near-by Purolator supplier equip your entire fleet with genuine Purolator Micronic* Refills now. Remember—there's a Purolator Refill for practically every make of vehicle and oil filter.

*Reg. U. S. Pat. Off.



Purolator Products Inc.
Rahway, New Jersey; and
Toronto, Ontario, Canada

Training the driver is a simple task for he has little to do besides steer, accelerate, and brake the coach. He is free to handle fares and is on a par with traffic in matters of acceleration and speed. However, if the converter is to serve him properly, he must do certain things.

He should be trained to build sufficient air pressure in coach main tanks on a morning start before attempting to shift the transmission into "forward" or "reserve." He should be trained not to remove his foot from the throttle while the converter is shifting automatically, for in so doing he upsets the pre-set balance of engine-to-driveshaft speed and a rough shift results. He should receive instruction in the proper method of shifting from "neutral" to "forward" and "reverse" and should be given some basic instruction in the functioning of the converter, as it pertains to actual operation, so that he can make intelligent reports to the mechanic in the event of difficulty.

The coach service man should be schooled in the importance of cleanliness in the handling of torque converter fluids. The use of a portable closed container mounted on a dolly at a height sufficient to permit gravity feed through a hose will solve the dirty container problem and promote the cleanliness which is essential to long converter life.

The mechanic in the grease pit responsible for the periodic lubrication of this unit should be instructed briefly in the functioning of the converter, so that he will understand why he must not overlook the lubrication of turbine pump and clutch throwout bearings. He should know that high

(TURN TO PAGE 280, PLEASE)

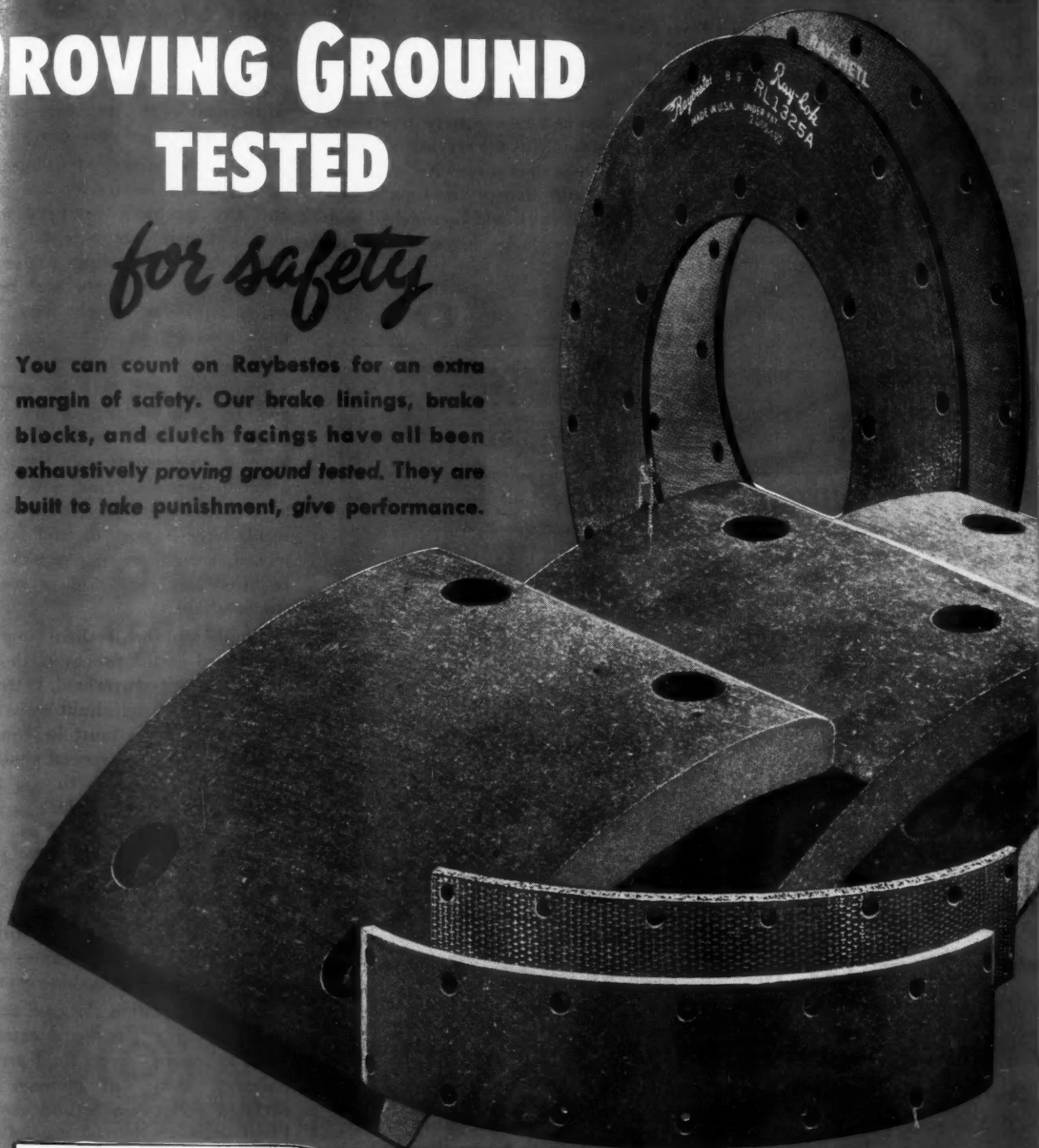
Named Driver of Year

Lloyd Reisner, 37-year-old driver for the Hancock Truck Lines, Inc., Indianapolis, Ind., has been named Driver of the Year for the nation's trucking industry. The selection was based on his long record of accident-free driving, plus a dramatic highway rescue during which he gave life-saving assistance to a mother and her nine-year-old daughter, injured in an automobile accident.

The American Trucking Associations, Inc., sponsor of the national contest, announced today that it will provide an expense-paid trip for both Mr. and Mrs. Reisner to Washington and New York. He also will receive a Crosley refrigerator and a large trophy from the Trailmobile Co., Cincinnati, Ohio, and other awards.

PROVING GROUND TESTED *for safety*

You can count on Raybestos for an extra margin of safety. Our brake linings, brake blocks, and clutch facings have all been exhaustively proving ground tested. They are built to take punishment, give performance.



Raybestos

The Raybestos Division of

RAYBESTOS-MANHATTAN, INC., Bridgeport, Conn.

America's Biggest Selling BRAKE LINING



RAYBESTOS-MANHATTAN, INC., Manufacturers of Brake Linings • Brake Blocks • Clutch Facings • Radiator Hoses • Fan Belts • Mechanical Rubber Products • Rubber Covered Equipment • Packings • Asbestos Textiles • Powdered Metal Products • Abrasive and Diamond Wheels • Bowling Balls

Torque Converter Operation

Continued from Page 273

transmission oil level may indicate turbine case seal leakage and that an immediate report of this condition should be made.

Fluid filters should be serviced on the grease pit so that the fluid may be drained and refilled in the event that excess sludge is found in the filters. Torque converter fluid contains certain additives and inhibitors to pre-

vent oxidation, foaming and sludging. These chemicals are gradually exhausted at a rate entirely dependent on the severity of the service in which the coach is operating. No set mileage for fluid change has been established. Filters should be watched and when excess sludge appears, indicating the exhaustion of fluid additives, the system should be drained and refilled.

The training of the mechanic in the operating garage is especially important. If he is familiar with the construction and functioning of the torque converter, the wiring circuits involved, and with the operation, and adjustment of the accessory controls, his job will be an easy one.

The basic principles of operation of the torque converter are simple and any mechanic equipped with a test light, a jumper wire, and a simplified trouble-shooting procedure will be able to locate and remedy minor troubles which may occur from time to time.

If he is taught how to make the adjustments that may be required, and most important, if he understands the effect these adjustments have on the operation of the unit as a whole, servicing time will be held to a minimum. Once these adjustments have been made and properly locked, very little change should be required until the unit is removed for overhaul.

The man in the overhaul shop must be trained in the proper methods of torque converter overhaul, if trouble-free operation of rebuilt units is to be achieved. He must be equipped with the necessary special tools and must be taught how to use them. He must have a clean place in which to work.

In too many shops we find unit overhaul being done within a few feet of brake drum grinders, steam cleaners or other sources of dirt and abrasives. Absolute cleanliness should be the watchword in turbine overhaul.

Clearances within the case and between rotating parts are extremely small to insure correct fluid pressure balances. Any dirt between these surfaces will cause serious damage. Fluid seals are lapped carefully before final assembly. Any abrasive or grit on seal faces will shorten their leak-free life appreciably. Unless the overhaul mechanic knows what to do, how to do it, and especially *why* he must take certain precautions, top performance of the overhauled unit will not be obtained.

END

MECHANICS ARE HUMAN

"If a man works in a clean place, he eventually will become clean. When he becomes clean, he will get better at his job."—B. M. LARRICK.

NEW! MARION HYDROGATE

Hydraulic Lift

The new Marion HYDROGATE is built to give more years of trouble-free service. All lifting and loading is hydraulically controlled, making loading of merchandise faster and easier . . . one man can handle loads ordinarily requiring two or three men. The Hydrogate is a powerful elevator, and serves as a safe, locking tailgate. It's fully adjustable — has non-skid platform.

- Rated Capacity 2000 lbs.
- Power closing
- Holds at any height
- Available in any size
- Fits any truck
- Easy to install

MARION

BODIES AND HOISTS

MARION METAL PRODUCTS CO., MARION, OHIO



**"SPREAD 72 TONS
OVER 110 FEET—
THAT'S SOME LOAD!"**

says Wayne Slocum, General Manager,
Percy Jones, Inc., Oklahoma City, Okla.

"But these U. S. Royals carry that much, and more, every day. Loads like this are just routine for our heavy duty trucks. We haul oilfield equipment over all types of highways, mostly on U. S. Royal Raymasters. We can count on these tires for superior performance—and as much as 20% longer mileage."

Raymasters are ideal for your high-speed, heavy-duty highway operations—extra-deep tread for longer mileage... special tread design for cool running... deeper anti-skid for safer, quicker stops... all this plus the cost-cutting, preventive tire maintenance plan of the "U. S." Fleet Service. Call your U. S. Royal Distributor today.

U.S. ROYALS

PRODUCT OF UNITED STATES RUBBER COMPANY



A Trucker Looks at THE HOOVER REPORT

There are four distinct plans before the nation, particularly its legislative and administrative bodies, concerning transportation. The Brookins Institute's recommendations (See Transport Department Proposed, CCJ, Page 42, Dec., 1949), Secretary Sawyer's Report, at the request of President Truman, (See CCJ, Page 71, Jan., 1950), U. S. Senate Committee on In-

terstate and Foreign Commerce's Subcommittee on Domestic Land and Water Transportation Report, (See CCJ, Page 67, Jan. 1950), and the broad Hoover Commission recommendations, which contained an overall plan for increased efficiency in the functioning of the various government agencies. Mr. Bryant comments on the latter recommendations.—THE EDITORS.

By Daniel P. Bryant

Vice President & General Manager
Bekins Van & Storage Co.,
Los Angeles, Calif.

THE HOOVER COMMISSION report is a significant contribution to the nation and to transportation. What will be the fate of the Hoover Report? Will it be forgotten? If every organization promotes the Report energetically, this will not happen.

One phase of the Report deals with recommendation of the Commission affecting all independent regulatory agencies; the other phase deals with recommendations affecting those agencies with which the trucking industry is primarily concerned.

The first phase recommends, to federal regulatory agencies, sound principles of business organization and administration, to eliminate red tape and inefficiency, and create proper lines of authority. For example, the Report finds that administrative duties of the various Commissions are divided among the member Commissioners; the result is lack of proper coordination and the bogging down of work. It is recommended that each bureau chairman, alone, have full responsibility for administration, freeing other members to handle the regulatory work. The Report also finds that appointees are often below par and recommends increases in salaries for Commissioners and staff members so that qualified personnel will be attracted to these positions. It is a fundamental of business that the right person in the right job means that the job will be done well.

The Hoover Report should be required reading for every business executive; it teaches the fundamentals of how to organize and administer.

Trucking Industry Affected

THE SECOND PHASE of the Report deals with those recommendations particularly affecting the trucking industry. (TURN TO PAGE 284, PLEASE)

For removing
**TOUGH
FINISHES**
the easy
non-inflammable
way



NEW WATER RINSABLE PAINT REMOVER

A great time and labor saver!

This new, powerful remover is especially designed for removing tough finishes from metal surfaces. Effective not only on lacquer, enamel, synthetics, etc., but also on baked enamel and tough primers, including Zinc Chromate.

Imperial Water Rinsable Remover is heavy bodied—will not run on upright surfaces. Easily applied with a paint brush.

Penetrates the toughest finish, causing it to form a soft mass that can be flushed off with water, using a hose. Or you can use a stiff bristle brush, steel wool dipped in water, or a putty knife.

No wash-up is needed after finish has been removed.

Safe on all commonly used metals.

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MAIL COUPON FOR LITERATURE

Write us regarding
your particular
removing problem

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Kindly send me literature on Imperial Water Rinsable Remover.

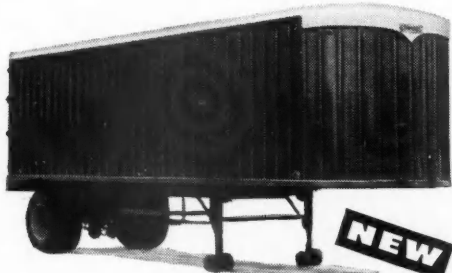
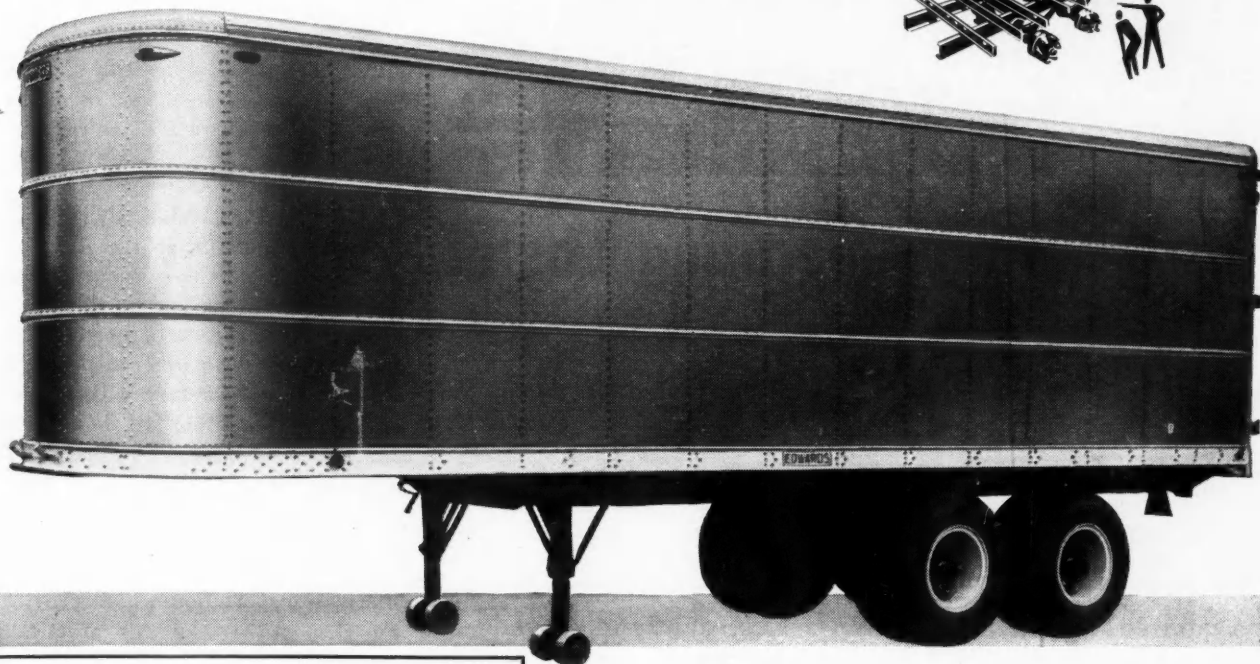
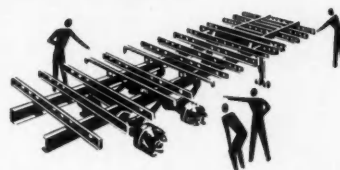
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HOW THE **DOUBLE-STRENGTH** FRAMES OF

EDWARDS

ALUMINUM TRAILERS

ADD TO YOUR PAYLOAD PROFITS



EDWARDS CORRUGATED TRAILER . .

has several new features that add to paying performance. Sturdy corrugated sides welded to top and bottom side rails . . . frame and side rails of hi-tensile, light weight steel . . . new, improved type landing gear . . . advanced free-end type springing. You'll get more mileage for less maintenance cost with an Edwards. Write for full information.

You wouldn't put a boy at the heavy work of a man, because he would lack the strength to handle it. That's why the new Edwards Aluminum Trailers have double-strength frames. They will handle man-sized jobs for you on the highways . . . and put a plus in your profits.

The frame is the backbone of a trailer. So Edwards takes an aluminum body with the same type frame that would be used on a frameless chassis. Then Edwards mounts the body on a chassis with a frame. This combination of aluminum body and a chassis of hi-tensile pressed steel, that is 2½ times as strong as ordinary steel and has amazingly little weight and bulk, also gives you greater payload capacity in place of deadweight.

Take a look at Edwards before you buy any trailer.

EDWARDS

TRAILER AND BODY COMPANY

DIVISION EDWARDS IRON WORKS, INC.

EDWARDS TRAILER AND BODY CO.
Dept. C-4, South Bend 23, Indiana.

Rush data on () Edwards Aluminum Trailers
() Edwards Corrugated Trailers
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DEALERS: A LIMITED NUMBER OF EDWARDS FRANCHISES ARE AVAILABLE IN RESTRICTED TERRITORIES



Will Cut Your Operating Costs!

Whether you use gasoline or Diesel engines, the one accessory that will cut your operating expense 40%, 50%, or more is a *good* oil filter.

MICHIANA Oil Filters, the *engine engineers'* filters, have been thoroughly tested and proven in every kind of service, and on every kind of motor driven vehicle for a quarter century. MICHIANA are constantly improved to meet engine developments.

MICHIANA's scientifically treated long-fiber cotton element absorbs the grit, abrasives and sludge in motor oils. Frequent and costly oil changes are eliminated,

thorough lubrication is assured, unnecessary engine wear is prevented, and repair bills cut. Fuel and oil bills are slashed because MICHIANA Filters keep engines in top, efficient operating condition for thousands and thousands of extra miles of service.

MICHIANA PRODUCTS CORPORATION
Michigan City, Indiana



A complete range of sizes and types is available to meet your particular service.

MICHIANA
OIL FILTERS

Hoover Report

Continued from Page 282

ing industry. Two recommendations are particularly important:

1. A transfer to the Department of Commerce from other regulatory agencies of all non-regulatory transportation activities. A section of the Department of Commerce would study the transportation needs of our country and take certain actions in promotion thereof.

2. The Report recommends that ICC functions dealing with safety of operations be transferred to the Department of Commerce.

Brookings Institute

THE BROOKINGS INSTITUTE recommended that the ICC, the U. S. Maritime Commission and the CAB be abolished and all their functions transferred to a newly established *Department of Transportation*, headed by a Secretary with Cabinet status. The Institute felt there would be more effective coordination of planning and regulation.

The Hoover Commission, however, felt that no one particular industry should be given such status, particularly transportation which provides an element of cost for practically every industry. Furthermore, the functions of various existing transportation commissions or bodies were considered vastly different from each other and separate treatment as to regulation was preferable.

What is the reaction of the trucking industry to these matters? The American Trucking Associations, Inc., has officially gone on record against the abolition of the ICC and the establishment of a Department of Transportation. I am sure that all members of the trucking industry support this position. Our industry fears the intrusion of politics into business. The creation of a Department of Transportation with a Secretary having a Cabinet status would make this intrusion possible.

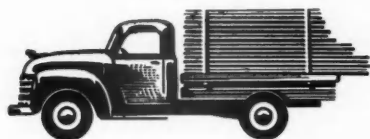
The Hoover Report states that the transportation service to be carried out by the Department of Commerce should study (and the following is quoted) "the most advantageous route patterns for extension of transportation services. Provision of new services in any given case should be

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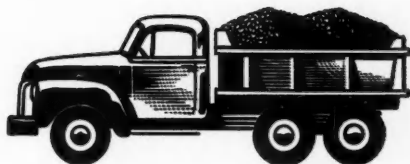
On Any Truck



When You Carry Overloads—You need



Greater Power Brake Capacity!



(You Can Be Sure with)

Bendix
HYDROVAC

WORLD'S MOST WIDELY USED POWER BRAKE

BECAUSE IT'S *"Load Rated!"*

Bendix
PRODUCTS DIVISION
SOUTH BEND
INDIANA

No matter what type of trucks you operate, it's just common sense to install the *right* power brake for the job. That's why you owe it to yourself to talk to your Bendix Vacuum Power dealer. He can give you sound reasons why Bendix* Hydrovac offers greater economy and flexibility on any job—his statements are based on fact, too, because Hydrovac is the world's most widely used power brake. Make it a point to see your Bendix Vacuum Power dealer soon; because we believe that when you get the facts you'll be solidly sold on Bendix "Load-Rated" Power Brakes.



Export Sales: Bendix International Division, 72 Fifth Avenue, N. Y. 11, N. Y.

PROOF

that GUN IRON* BRAKE DRUMS



**CUT
COSTS
3 WAYS**

** New high-carbon alloy of Gun Iron developed expressly to minimize heat-checking and squeal—give longer wear-life.*

Proven Features

- LONGER WEAR
- MINIMIZED HEAT-CHECKING
- MINIMIZED SQUEAL
- LOWER COST-PER-MILE

TRUCKER REPORTS:

Savings of \$136.62 on brake drum costs per truck for every thousand road-miles; here's how it figures out. This trucker is making daily runs through the mountains with real tonnage. The excessive drag on his brakes frequently cracked through ordinary cast iron brake drums in one day! Hunt-Spiller drums, of the new Gun Iron alloy, last over eight months on the same run. And the above savings do not include savings in service costs or profits lost while the trucks are in the garage.

BUS COMPANY REPORTS:

Ordinary brake drums were lasting an average of 30,000 miles before they had to be replaced. After installing Hunt-Spiller Brake Drums the bus company reports that the original set has gone 97,000 miles currently and is nowhere near the replacement point.

Gun Iron Brake Drums have been noted for long-wearing ever since they were pioneered by Hunt-Spiller over twenty years ago. The above reports are based on the new high carbon Gun Iron alloy perfected in our laboratories expressly for brake drum applications. Our representatives will gladly discuss their features with you upon request. Built to original equipment specifications for most busses and trucks; fully guaranteed.

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HUNT • SPILLER

MANUFACTURING CORPORATION

AUTOMOTIVE DIVISION

399 DORCHESTER AVENUE • SOUTH BOSTON 27, MASS.

Hoover Report

Continued from Page 284

weighed against all types of transportation service already provided, as, for example, a proposed new air route should be weighed not only against other air routes but against all types of transportation."

How will this affect particular carriers whose applications for routes are before the ICC or the CAB? This is not made clear in the Hoover Report. We all want more efficient and less costly bureaucracy, not more bureaucracy. We are, therefore, concerned over an enlargement of the functions of the Department of Commerce.

Safety Functions

AS TO THE TRANSFER of safety functions from the ICC to the Department of Commerce, I believe there will be considerable disagreement. The ICC itself may not be favorable to this proposal, feeling the work it is doing in the field of safety of operations is not logically severable from its other work.

Many truckers feel that the ICC is doing a good job and are reluctant to trade something that for years has been satisfactory for something which could cause us grief.

The heads and chief officials of practically every bureau and agency affected have protested the changes affecting their own particular functions, though otherwise praising the Report. The pressure of these various persons and groups is tremendous. As much as three billion dollars may be saved through the elimination of inefficiency. A lot of money and a lot of people are involved. It would be contrary to human nature for government men, regardless of their sincerity, to do other than protest.

END

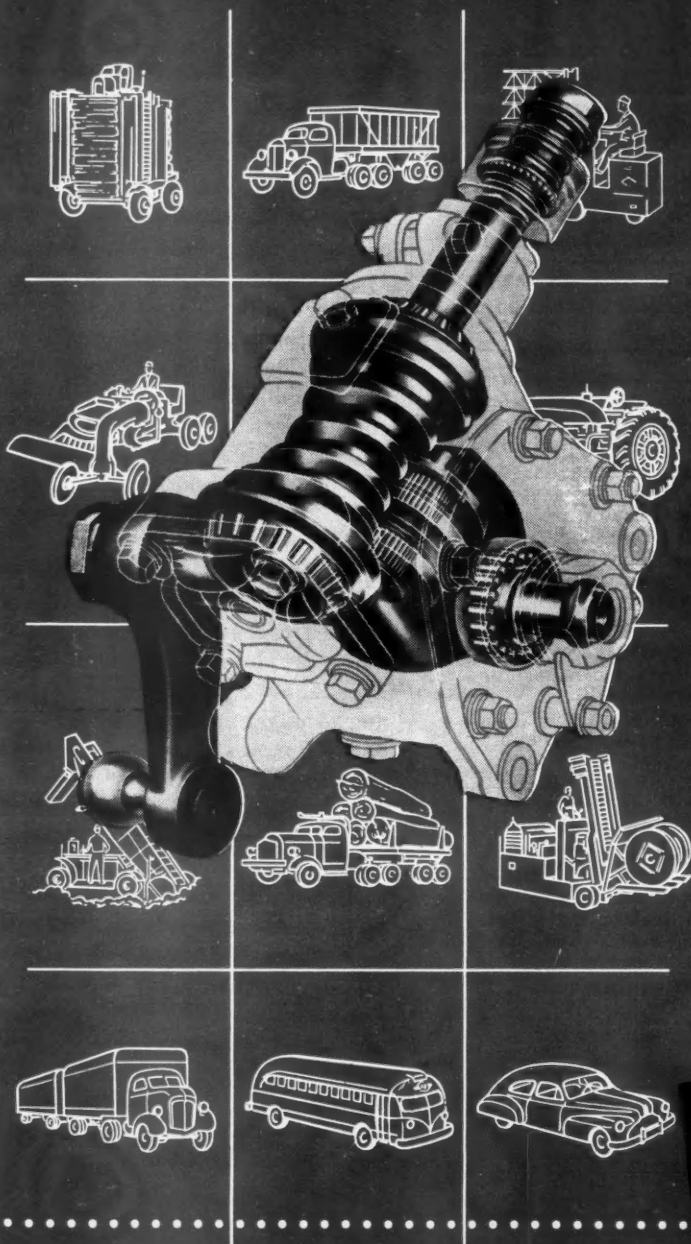
IHC Appoints Two New Dealers In Pennsylvania

The firm H. G. Bender has been appointed International truck dealer at Meyersdale, Pa. H. G. Bender, who heads the firm, is sales manager, Charles Uphold is service manager, and M. W. Lindeman is parts manager.

It also was announced that Proctor Bros. has been appointed International truck dealer at Irwin, Pa. Partner John S. Proctor is sales manager, and Partner Owen G. Proctor is service and parts manager.

Having Hardly Any Maintenance Of Its Own
It Reduces Over-all Maintenance Of The Vehicle

Gemmer Easy Steering



Maintenance of a Gemmer Steering Gear is almost nonexistent. Lubrication and simple adjustment at long intervals . . . that's all.

Gemmer steered vehicles are easily maneuverable, substantially reducing driver fatigue, keeping the driver fresh. Alert and untired at the easily responsive wheel, he gets through heavy traffic—in and out of parking places, docks and narrow entries with much less vehicle damage. Thus, Gemmer Steering contributes to a material reduction in costly maintenance.

A fresh driver means more mileage per vehicle per day . . . additional economy.

Gemmer Easy Steering is always responsive, firm, with no rubbery feeling or wander. Hour-glass worm and rolling gear teeth sector almost eliminate friction. Strength is abundant and there is plenty of power for parking.

With reasonable care, a Gemmer Steering Gear will last the life of the vehicle.

GEMMER MANUFACTURING CO.

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Gemmer Has Been Making
Steering Gears for Motor Vehicles
for 43 Years

Controlling Wear in PISTON RINGS*

by A. M. Brenneke

Chief Engineer
Perfect Circle Co.

▼ THERE ARE THREE generally recognized major causes of cylinder wear. These are: abrasion, corrosion, and scuffing.

Abrasive wear of cylinders is largely caused by air-borne dirt. The en-

gine air supply must be kept clean if low wear rates of cylinders and rings are to prevail. Abnormal wear rates may be expected if dirt is admitted in excess of .00025 grams per cubic foot of air. This applies to air after it

leaves the filter and as it enters the engine. Dirt in the lubricating oil may also accelerate cylinder wear, but the effect on crankshaft and bearings is so much greater that we need not consider it at great length here.

Corrosion is probably the second most important contributor to cylinder wear. The most predominant cause of corrosive wear is low coolant temperatures due to design, or more often, operating conditions. Generally, abnormal wear becomes apparent at 120 deg. F., or less. Jacket temperatures should be maintained at 160 deg. F. or higher for lowest cylinder wear. To determine the effect of coolant temperature on cylinder wear rate two engines which were subjected to 1000 hr. cyclic dynamometer tests which simulated city bus operation. The two engines were equipped with different cylinder liner materials and each engine contained three widely different compression ring combinations. The tests were run at over 160 deg. F. water out temperature except during the 300 to 400 hr. period when it was reduced to 120 deg. F. Wear rate increased in all but three cylinders during the period of low jacket temperature and the rate change was similar in spite of great variation in level before and after the low temperature period. Exceptions to the rule were probably due to slight errors in measurement or differences between individual cylinders in cooling characteristics. The increase in wear rate with low coolant temperature was evident, but less pronounced on the rings. Ring wear is usually less adversely affected by low jacket temperature than cylinders. High sulphur diesel fuels are rapidly overtaking low coolant temperatures as a cause of cylinder and piston ring corrosive wear.

The question of what can be done through piston ring design and application must necessarily be treated in considerable detail. First, let us consider what can be done to improve resistance to abrasive wear.

(TURN TO PAGE 290, PLEASE)

*—Excerpted from a paper presented at the SAE Annual Meeting, Detroit.

EASIER, QUICKER WAY TO REBUILD CARBURETORS

Hailed by Fleet Operators & Mechanics

HYGRADE *Fingertip System*

(covers practically all carburetor makes)

Makes a carburetor expert out of any competent mechanic in 1 week's time.

Lops as much as 25% off the time sheet for shops that are already rebuilding carburetors.

You'll have real insurance against "down-time" because you *know* that every part that wears has been replaced with a *brand new part* from the Hygrade kit. Without leaving the shop—in a matter of hours—every mechanic can learn to dis-assemble and rebuild a carburetor.

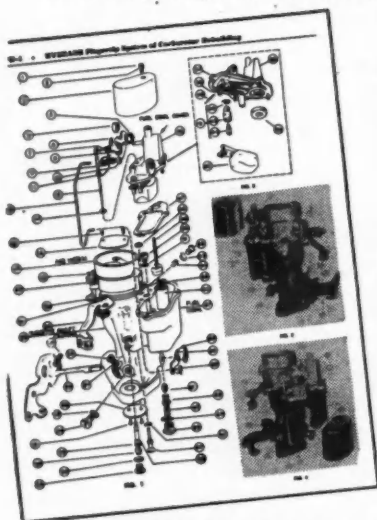
All the mumbo-jumbo that mechanics used to associate with carburetor rebuilding is gone. Packed in every kit are clear step-by-step instructions, arranged in sequence of assembly which tie in with large exploded-view drawings and photos. The location of parts on these pictures is so easy that parts practically fall into place by themselves.

THE HYGRADE FINGERTIP KIT

ALL THE PARTS the mechanic needs for rebuilding a carburetor are literally at his fingertips...packed and labeled in separate envelopes for each assembly operation. Work is done step-by-step, envelope by envelope. (As each assembly operation is completed all the parts in that envelope are used up.)

For real insurance against "down-time", write us—giving the make and model of one of the carburetors you use. We will send a sample instruction sheet. Convince yourself by actual test, how easy carburetor rebuilding can be.

SAVE GAS • SAVE ON DOWN-TIME



OPERATE YOUR OWN CARBURETOR REBUILDING DEPT.

with the Hygrade Fingertip System. You save time; you save money; you know the carburetor has been completely rebuilt with brand new parts.

Write today, on your company letterhead, for FREE sample instruction page from the Hygrade Manual.

HYGRADE PRODUCTS DIVISION

STANDARD MOTOR PRODUCTS

35-41 Thirty-fifth Street • Long Island City 1, N.Y.

New, Exclusive Firestone

RUBBER RESINOUS-PLASTIC GUM-DIPPING PROCESS...Increases your Tire Mileage...Cuts your Tire Costs

FIRESTONE pioneered and patented the Gum-Dipping process in 1921. It was an outstanding development and thousands of truck owners have benefited by it because it greatly increased tire mileage and reduced their tire-cost per mile.

Now Firestone leads again with a revolutionary new Rubber Resinous-Plastic Gum-Dipping process that adds thousands of extra miles to tire life. The basic advantage in this process is the fact that the resinous plastic material has a natural affinity for rayon and becomes an inseparable part of the rayon cord. As it flows around the cord filaments it carries pure rubber with it. The rubber greatly increases adhesion and contributes to longer flex life. Longer flex life means longer tire life.

To truck owners the advantages of the new Firestone Resinous-Plastic Gum-Dipping process add up to more original miles — more retread miles — and of course, lower cost miles — the net of which is dollars saved.

Listen to the Voice of Firestone every Monday evening over NBC

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When Buying New Tires or New Equipment
Specify **FIRESTONE TRUCK TIRES**





"Follow the Leader"

One basic design



DOUBLE DRIVE SIX-WHEELER

RIGHT!

RIGHT!



TRAILING AXLE SIX-WHEELER



TANDEM AXLE SEMI

RIGHT!

RIGHT!



SIX-WHEEL FULL TRAILER



PORTABLE SPECIAL MACHINERY

RIGHT!

RIGHT!



SIX-WHEEL CRANE CARRIER



Right!

FOR EVERY TANDEM APPLICATION

HENDRICKSON MOTOR TRUCK COMPANY

8001 West 17th Street • Lyons (Chicago Suburb) Illinois

Piston Rings

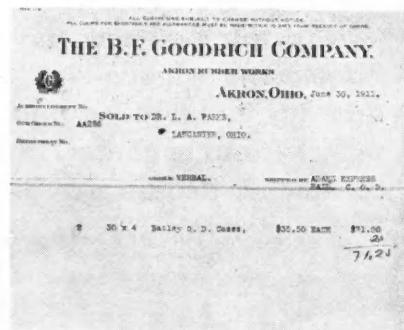
Continued from Page 288

Top compression rings are the most important consideration in this respect. Anything we do to reduce their wear rate also reduces cylinder wear. Width of top rings should be as great as the output, scuffing tendencies, and space limitations of the engine design will permit.

Selection of material for top rings is important. We have for the past ten years used a heat treated chrome-moly alloy cast iron material for compression rings for all diesel applications. During the past five years chrome-plated top compression rings have been widely adopted in diesels. Such rings are plated with .004-.007 of solid; that is, not porous, chrome plate. We have made and used both types but prefer the solid type for maximum scuff resistance and minimum wear rate. A few applications demanding extremely long life are using .008 minimum plate thickness. Tool marks in the finished plate. Result in the greatest scuff resistance we can provide in a chrome-plated ring but inflicts a slight penalty on initial oil economy. A smooth finish is used in cases where this penalty can not be tolerated. In both cases the rings are finished after plating by a lapping operation. The lapped finish has good scuff resistance and is necessary to provide adequate initial face accuracy. Face inaccuracies

(TURN TO PAGE 292, PLEASE)

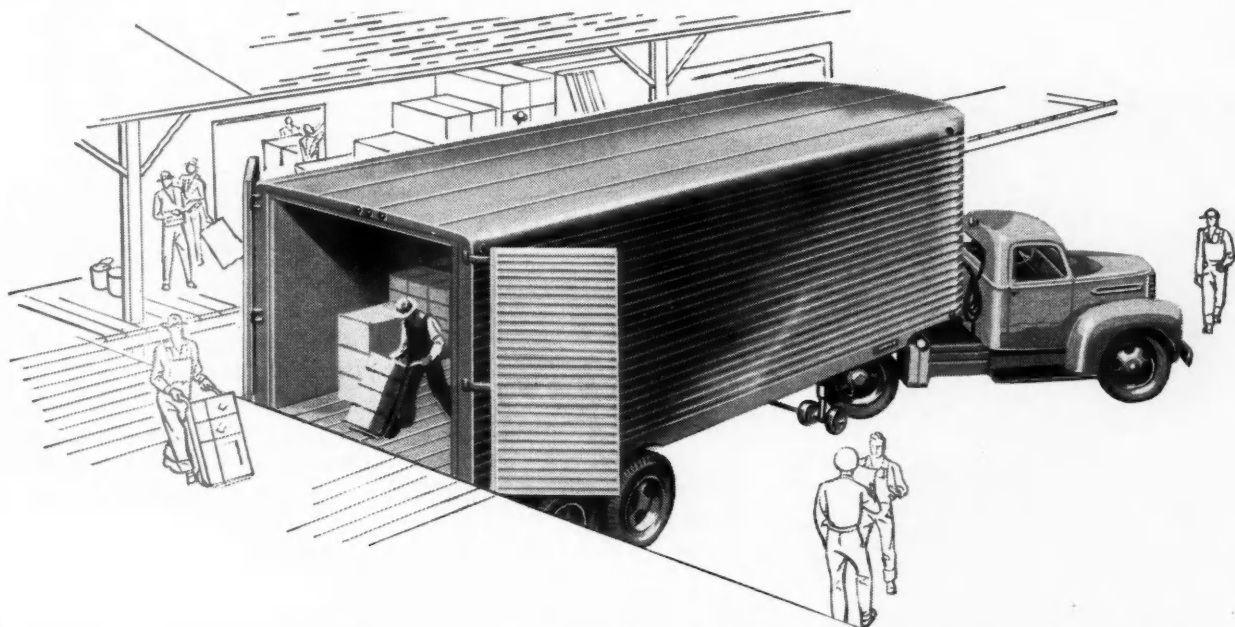
Higher Tire Prices?



Tire prices 39 years ago as compared to those at present are illustrated in this copy of a 1911 invoice for the purchase of two tires in 1911, recently sent to The B. F. Goodrich Co. The casings were those used on one of the popular cars of the day. The current retail price of a 6.00-16 casing, most popular size, is \$15.80, plus \$1.12 Federal tax

TURN MORE DEAD WEIGHT INTO PAYING FREIGHT WITH—

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Magnesium Trailer Flooring ***44% Lighter! 83% Stronger!***

An extra 724 lb. of revenue producing freight added to the capacity of a 35-foot van trailer! That's what happened when a leading trailer manufacturer switched from 1½" composite flooring to extruded magnesium "boards". And along with this extra capacity came additional strength. The new flooring can carry an 83% greater concentrated load.

The increased pay load made possible by magnesium means extra profit to most operators. This lightweight, strong material cuts useless dead weight to a minimum, for it is by far the world's lightest structural metal.

Truck bodies, too, can be more profitable when made of magnesium. Significant reductions in dead weight pay off in increased capacity and reduced maintenance. Extensive cost records have proved it pays operators to buy magnesium lightness. Investigate magnesium. See for yourself how it can cut operating costs, increase profits.

For more information about the use of magnesium in highway transportation, call the nearest Dow sales office or write direct.

Magnesium Division, Dept. MG-85

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The Lightest Truck Bodies Are Made of Magnesium

COMMERCIAL CAR JOURNAL, April, 1950

Controlling Wear in Piston Rings

Continued from Page 290

must not exceed .0001 when solid chrome is used since the extremely low wear rate leaves the ring with little ability to "run in" or wear out these inaccuracies.

Locating the top ring on the piston is an important consideration as regards scuffing tendencies. When the piston is at the top of the stroke, the

top ring should not travel beyond the end of the water jacket in order that the top ring will not have to operate in excessively hot areas of the cylinder. Locating the top ring well down on the piston is advantageous too. A wide top land protects the ring from direct effects of combustion and reduces its operating temperature.

The top ring must also be well supported by a strong second land if it is to do a good sealing job and enjoy a low wear rate. For a rule of thumb .20 per inch of cylinder diameter for top lands and .05 per inch for second lands will provide adequate land widths. Distribution of space on any piston is always a compromise which must be made for each individual engine. During recent years the trend to fewer compression rings in diesels has somewhat simplified the matter. Many diesels are performing excellently with three compression rings and several have been very satisfactorily sealed experimentally, with only two compression rings. Another space saving device on which several engine builders are doing considerable work currently consists of using two oil rings in a common groove. Experimental results have been excellent, although not enough test time has been accumulated by any of those working on the arrangement to make any predictions as to durability.

It appears that low minimum wear of pistons and cylinders is a matter to taking the utmost advantage of many small details of materials and design.

END



Engineered to serve better, to last longer, and to reduce service cost, Niehoff Warranted Ignition will prove a profitable investment for any truck operator.

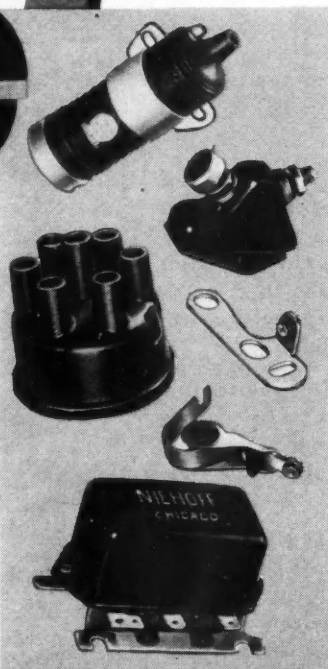
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NIEHOFF The Best in Ignition

Dodge Offers Fluid Drive on 1/2, 3/4 and 1-Ton Models

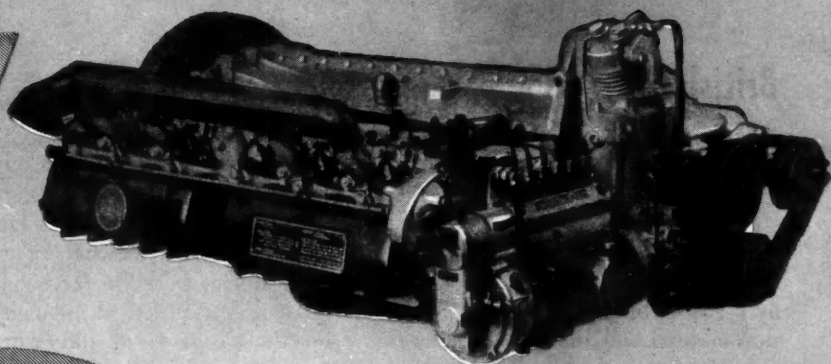
Dodge is now offering gyrol fluid drive on "Job-Rated" trucks with nominal ratings of 1/2, 3/4 and 1 ton, with gross vehicle weights ranging from 4250 to 10,100 lb.

Fluid drive is said to give truck loads a safer ride, providing easier and smoother starts; better tire mileage; less wheel spin in mud or slush, and it cushions more than 80 vital parts against driving shock. Service costs are lowered, and trucks with fluid drive last longer.

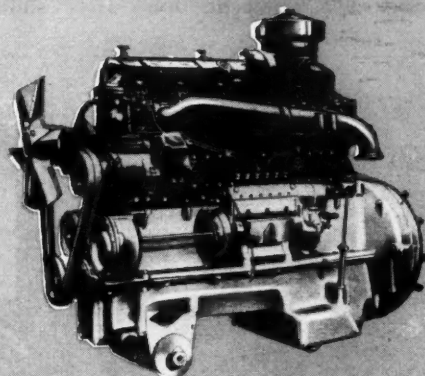
The fluid drive unit consists of two fan-like members shaped like shallow metal bowls. A number of vanes lead from the center hub to the outside edge of each bowl. The two bowls face one another in an airtight housing partly filled with oil.

The front bowl is connected to the engine crankshaft. The rear bowl is connected to the clutch.

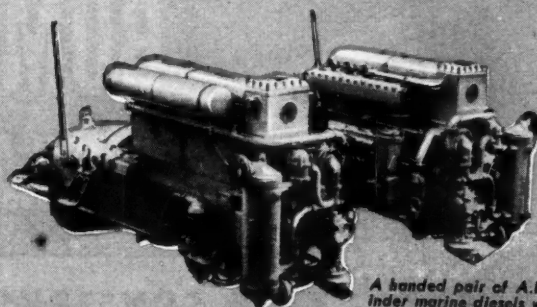
With the engine idling, the front bowl turns slowly in the oil. Like a slowly-turning electric fan facing a still fan, this turning doesn't disturb the rear bowl. As the engine speeds up, the front bowl turns faster and forces oil against the vanes of the rear bowl with more force. The rear bowl begins to turn, and the truck starts to move. When the truck picks up speed, the two bowls spin at about the same rate. The fluid drive unit thus acts as a cushion in the power train between the engine and the clutch.



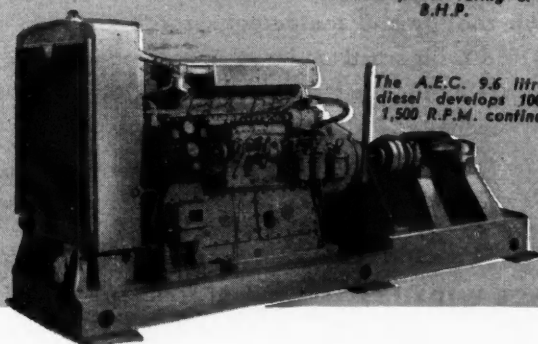
A.E.C. 11.3 litre 6-cylinder horizontal diesel for Transit type bus.



A.E.C. 9.6 litre 6-cylinder vertical diesel for Road Transport work.



A handied pair of A.E.C. 6-cylinder marine diesels with an individual power rating of 100 B.H.P.



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The exhibition to be started this month in New York by the British automobile industry will show a full range of A.E.C. diesels . . . the most famous in the world. They power buses and heavy-duty trucks all over the globe! They are the driving force of a large number of seagoing craft! They are widely used in factories to provide reliable, inexpensive power! And those wartime marvels, the historic "Mulberry" ports, owed their main power, light and heat to A.E.C. Diesel-Electric sets! A.E.C. diesels are a power in most lands . . . see them at the Exhibition!

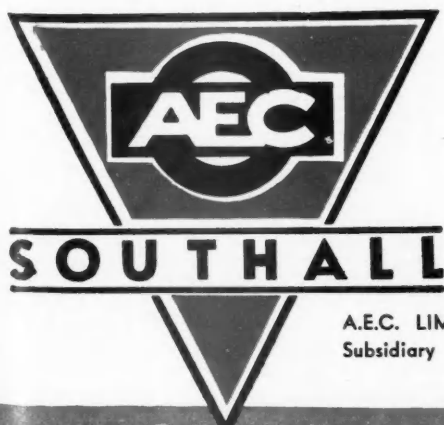
See the range of A.E.C. Diesels on

STAND 3

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APRIL 15-23, 1950



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British Gas Turbine Engine Only Experimental Model

Recent news releases provided exciting stories about the successful development of an automobile powered by a gas turbine engine. The impression created was that in the near future the internal combustion engine would be as obsolete as "Old Dobbin."

A clear-cut statement by Mr.

Maurice C. Wilks, chief engineer. The Rover Co., manufacturer of the Rover Gas Turbine Engine, points out that the vehicle and its power plant are still in the development stage.

He emphasized that the facts contained in the somewhat exaggerated news stories were "in fact what might be called a practical interim report on the progress of our work. We know we still have a long way to go before the gas turbine car becomes a marketable proposition, but this will show that we have gone some way on

the journey, and that the gas turbine car has some very attractive features.

"The present engine is really a piece of test bed apparatus and, in consequence, does not bear much resemblance to what the company has ultimately in mind for a motor car; either in power output, dimensions or weight. It would be a mistake to regard this particular engine as representing anything approaching finality. In any case, in any future 'production' car we would certainly not put the engine where one expects to find the back seat. That has been done purely for convenience in this case, and because the vehicle is, literally, a mobile test bed.

"This car does, however, demonstrate that many of the major problems have been solved, and that it is possible to build a vehicle with only two-pedal control — accelerator and brake.

"It is obviously The Rover Co.'s intention to produce a gas turbine engine car as a marketable proposition if and when that becomes practicable; in which case it certainly will be as good as—most probably better than—existing piston engine cars in respect of performance and weight. Probably, though, it will not be quite so good in respect of fuel consumption, but to balance that, the performance will be superb."

It also was pointed out that the present engine was designed to include a heat exchanger, but "as the design of this is one of the most difficult problems involved, its development is for the most part being done away from the engine; the initial engines being run without heat exchangers—in which condition their fuel consumption is more than twice what it would be in a good piston engine of equivalent power. With a heat exchanger, however, the gas turbine's fuel consumption comes down to within measurable distance of that of the conventional piston engine. Fuel may be petrol, paraffin or diesel oil.

"For a road vehicle the gas turbine offers two pedal controls; as there is no need for a clutch or manual gear change in the accepted sense. With a piston engine the problem is one of fit and wear; with the gas turbine there are few close fits and there is very little wear, but balance is a big problem, as it must be nearly perfect."

END



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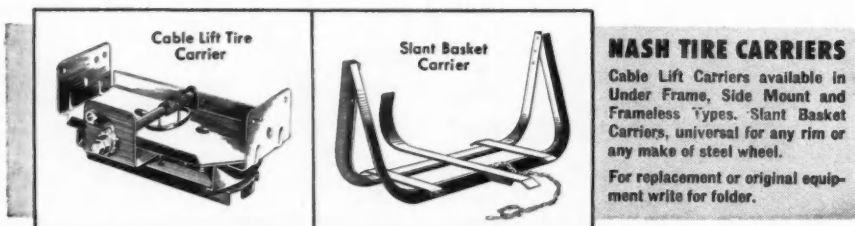
3½", 4½", 5½", 6" and 6⅞" wide

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FULL—With end form up to 7½"

WRAP AROUND—End form as deep as required



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